

# SD Times

SOFTWARE DEVELOPMENT

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## SOFTWIRE 2.0: A DEVELOPMENT TOOL FOR NONPROGRAMMERS

'DRAG-AND-DROP' ADD-IN MAKES VB CODE-FREE

BY EDWARD J. CORREIA

Measurement Computing Corp. this week is scheduled to release SoftWire 2.0, a graphical programming add-in for Microsoft's Visual Basic 6.0 that the company claims will permit developers to create Visual Basic programs with little or no need for code writing.

SoftWire is made up of a series of COM and ActiveX-compliant controls that are accessed through Visual Basic's menus and tabs. Components are selected from a menu and connected with drag-and-drop wires.



About 80 percent of jobs can be done with our tool, says Judd.

According to Bob Judd, vice president of marketing at Measurement Computing, SoftWire began its life as a customizable tool that accompanied its data acquisition and control hardware and sat atop Visual Basic. Measurement Computing manufactures computer-based testing and measurement equipment and software for the general purpose interface bus (GPIB).

While the new version of SoftWire still contains its data acquisition and GPIB tools, according to Judd, it

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## BEA's WebLogic Gets Sun's Seal Of J2EE Approval

First server outside iPlanet  
to win specification compliance

BY DAVID RUBINSTEIN

BEA Systems Inc. has become the first independent software vendor to pass the Sun Microsystems Java 2 Enterprise Edition (J2EE) compatibility test suite, the company announced last month. BEA claims that its WebLogic application server is now the de facto standard for J2EE implementations.

"We think this validates our position as a leader to market with enterprise Java technologies," said John Kiger, director of product marketing for BEA's e-commerce server division. "This is a big step forward for customers, who can see the promise of standards-based solutions being delivered."

iPlanet, the Sun-Netscape alliance, was first to market with a J2EE-certified application server in May; at the time, Kiger claimed that because Java technology is controlled by Sun, iPlanet had the inside track to the certification test suites.

Now that the Java Community Process has been updated, and much of the control over the technology will be held by executive committees, Kiger feels confident all JCP members will get access to certification



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test suites at the same time. "We're not concerned about access being an issue going forward."

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## Application Testing Gets WAP-ped

RSW offers suite for examining wireless software

BY DAVID RUBINSTEIN

Extending its product line from desktop to wireless, RSW Software Inc. this month will make available in general release its e-Test for WAP testing suite for wireless applications.

Three components make up the suite—e-Tester for WAP, e-Load for WAP and e-Monitor for WAP. The e-Tester works with regression and functional testing; e-Load watches load and stress testing, and e-Monitor tracks performance after deployment.

"This is based on the same

underlying technologies used for Web application testing," said Yves de Montcheuil, director of product management for RSW (www.rswsoftware.com). "It's the same back-end applications serving Web users and WAP users, with the main difference being the format, either HTML or WML."

One of the features, he explained, is that e-Test can do both Web and WAP application testing at the same time, before they go live. "If you have 200 Web users and 100 WAP users," he said, "you'll want to be able to see how the applications run with all 300 users at once to make sure all the users won't crash the application."

De Montcheuil explained that Web application testing is done by recording transactions, from which a Visual

Script is made and the testing is done. For WAP applications, the e-Test user can record interactions using a PC-based phone simulator, which captures the WAP experience so the Visual Script recording copies the interactions exactly as they would happen during wireless access. Each Visual Script captures and represents the WML Document Object Model for each page, making sure the application is operating as it is written. Also, because of the dynamic nature of WAP applications, the Visual Script is updated automatically with any changes.

De Montcheuil said RSW believes WAP applications do not necessarily mark a move

away from the desktop, but rather will serve as a complement to it. "We don't see people managing their bank accounts on a PDA, but they might want to check their balances," he said. "Or it will be good for someone in an airport who won't need a modem plug to check the status of a flight."

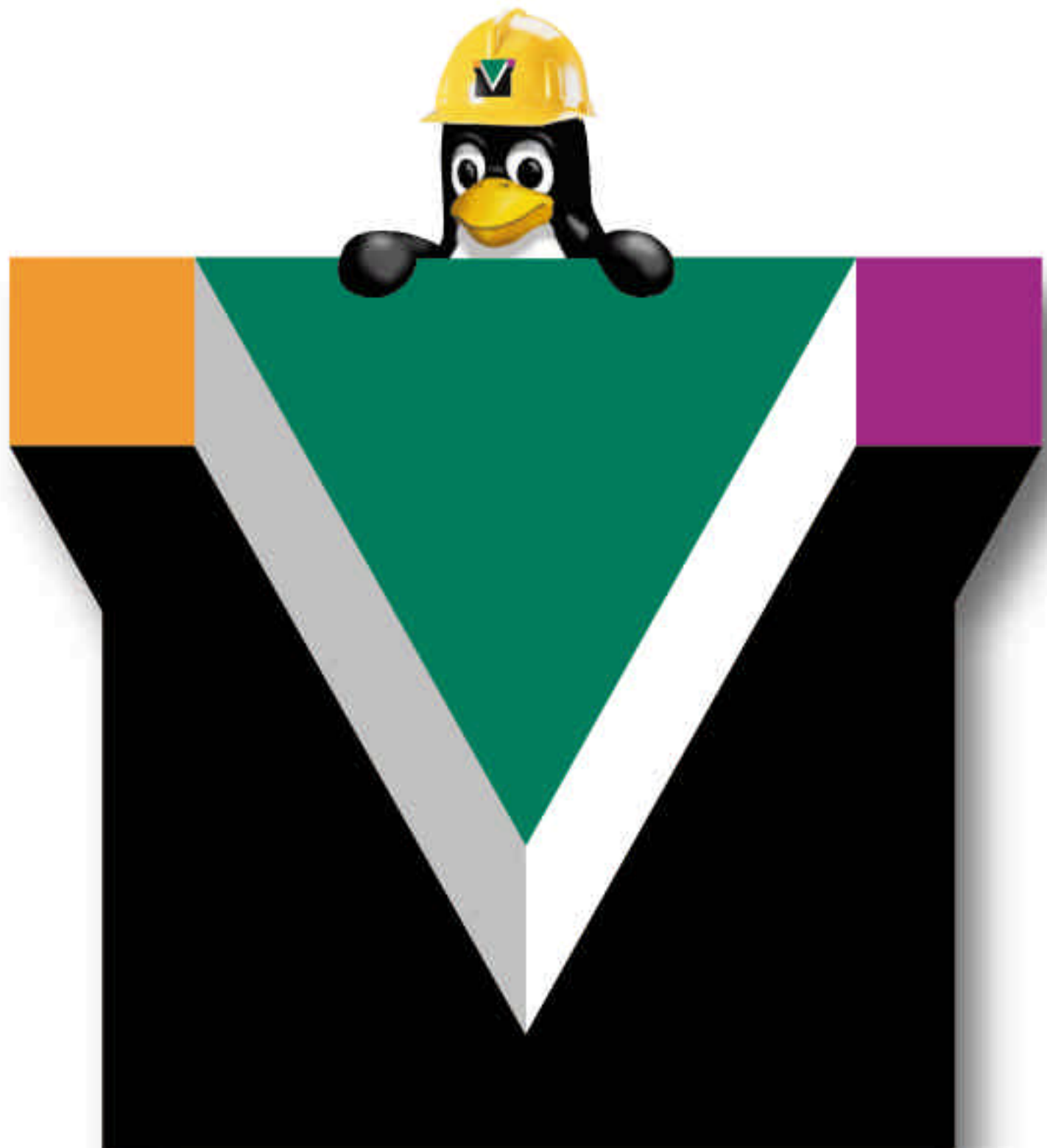
RSW designed the first demo version of the e-Test for WAP early this year, recognizing that it's the direction in which cell-phone service providers and manufacturers are moving. "Maybe two or three years down the road there will be something a lot better, but today [WAP] seems pretty strong. There are some impressive names...Sprint, Nokia, Motorola..."

The price for e-Test for WAP is \$6,995. An upgrade option, starting at \$2,000, is available to e-Test suite customers who want WAP functionality. ■



Testing wireless apps is much the same as testing Web apps, says de Montcheuil.

# MontaVista...



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# Sybase Set for J2EE Server Compliance

Will submit application server to Sun next month for stamp of approval

BY EDWARD J. CORREIA

Move over WebLogic. Sybase Inc. this week is scheduled to begin shipping Enterprise Application Server 3.6, a version of its application server platform that it says is technically compliant with Sun's Java 2 Enterprise Edition (J2EE) specification. Sybase said at its TechWave conference in Lake Buena Vista, Fla., in July that it plans to submit the product to Sun Microsystems Inc. for certification testing next month.

"It's a very important thing to be certified," said Al McGuire, director of product marketing at Sybase's Internet products division. "Customers want to know that this product is compliant to the [J2EE] standard." McGuire said he is confident that the product will pass Sun's rigorous compliance testing and that getting the company's stamp of approval is merely a technicality. "It's more of a

market positioning issue than a technical issue, because I believe we are shipping the technical capability now."

McGuire said that EAServer competes with products such as BEA's WebLogic and IBM's WebSphere. Of the two, only WebLogic is certified J2EE-compliant. What most sets the Sybase platform apart, he said, is connectivity. "You can run anything with this product," he said. "You can run any kind of objects, whether it's CORBA, Java or COM. We also interoperate with all major databases. It's a very open platform. And we believe that's a very important differentiator because app servers are going to work in environments where a lot of the code has already been written on different platforms. Now people want to give Web access to those applications."

Compliance with the J2EE specification, McGuire said,

means the platform will offer support for Enterprise JavaBeans, Java Servlets, the Java Naming and Directory Interface (JNDI), Java Transaction Service (JTS) and the Java Transaction API (JTA). The platform also supports ActiveX, C/C++, XML and the company's own PowerBuilder application environment.

EAServer 3.6 is available in four editions, starting at \$2,995. For more information, visit [www.sybase.com/products/easerver](http://www.sybase.com/products/easerver).

## POWERBUILDER 8.0 NOW IN BETA

Sybase also announced at TechWave that it has begun beta testing of PowerBuilder 8.0, its object-oriented distributed application development environment. According to a company report, the new version will include tighter integration with EAServer, improved Web

integration and enhanced error-handling capabilities.

"We're taking version 8 beyond distributed applications and tight integration with our EAServer, and we're incorporating Web functionality to allow developers to build Web clients for distributed applications and components within the single IDE," said Michael Salerno, director of product marketing for Sybase's Internet products division. "We now [will] have a unified development environment for building distributed and Web applications," essentially enabling a Web browser to be used as a front end to access PowerBuilder applications with little or no HTML coding required, he said.

According to Salerno, developer productivity also will be enhanced by way of a new concept called workspace and targets, which he said lets

developers build multiple applications simultaneously. Salerno explained that workspaces are responsible for holding all the application targets, and a target represents the build and deploy options of an application. Targets might include a traditional PowerBuilder client, a component or a Web client.

PowerBuilder also will feature improved exception handling, which Salerno described as similar to that found in Java. "Exceptions can be handled inside the script where it occurs rather than being handed to a global event handler," he explained. "This is better because you don't have to write an elaborate algorithm to handle all the various types of exceptions in a single event. You can handle that error directly from where it occurs."

Sybase is scheduled to release PowerBuilder 8.0 ([www.sybase.com/products/powerbuilder](http://www.sybase.com/products/powerbuilder)) for open beta testing in November, with general availability planned for the first quarter of next year. Pricing has not been determined. ■

# Compuware Drives Development Forward

Products upgraded for .NET support, e-business capability, testing

BY DAVID RUBINSTEIN

Compuware Corp. has announced a pair of product family upgrades and an acquisition as it looks to strengthen its strategic position in the software development and performance markets.

Compuware's product strategy, according to product management vice president Doug Turner, extends into four areas: application development and integration; quality assurance; production readiness; and performance management.

The flagship for the strategy, he said, is Compuware's forthcoming Uniface version 8, which the company is calling an e-business platform. It was released to beta in July and is expected to be generally available in November.

"The transition from 7 to 8 is that 7 was an application development and assembly workbench, while 8 is an e-business workbench, where customers can now integrate and assemble e-businesses," said Edwin Schumacher, director of product management for the Uniface product line.

One of the key technologies, Schumacher said, is business process automation, whereby developers can not only model the business process, but execute it as well. The application logic is separate from the business process logic, he said.

Uniface 8 supports Linux, OS/390, OS/400, Unix and Windows, Schumacher said. It is compatible with DB2, Informix Oracle and Sybase databases, and a single developer license is \$7,950.

## A .NET STRATEGY

Compuware ([www.compuware.com](http://www.compuware.com)) has high hopes for Microsoft's new .NET platform, and is putting its products right on the line, starting with bringing its NuMega DevPartner Studio suite of development tools to .NET. "We're about analysis," said NuMega development center director Ed Sullivan. "When Microsoft approached us in April 1999 and said they were working on a strategy for next-generation Web application architecture, we began working on a set of APIs. The culmination is our support for .NET."

Sullivan said Compuware has shown a working version of TrueTime, a performance analysis tool included in the DevPartner Studio suite, that supports .NET. "Because it will be language independent going forward, we already support languages and technologies emerg-

ing under .NET...C#, Visual Studio and anything else using this infrastructure," Sullivan said.

"We're the first vendor to take a whole view of what error detection, code coverage and performance solutions mean for Web applications," said Shari Zedeck, NuMega prod-

uct management director. "We need to support all technologies Web application developers use, such as scripts, Active Server Pages..."

Zedeck pointed out that DevPartner 6.5's ability to bring together run-time performance data from all of a company's Web application servers, and bring it together in a single console, is uniquely suited for Web developers.

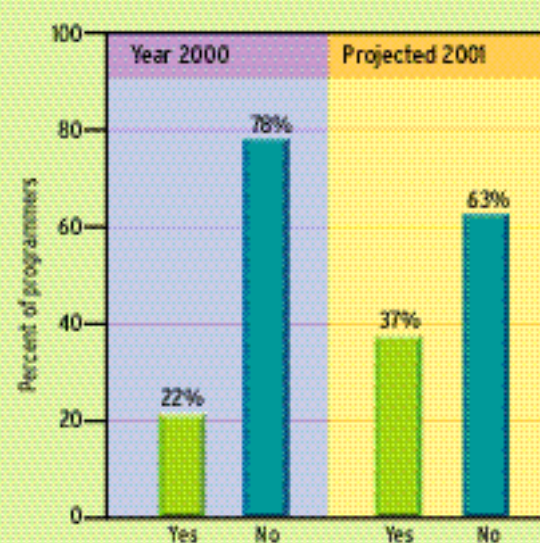
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## LEGACY DATABASES GO MOBILE

EVANS DATA WATCH

A legacy database is an existing database that was designed and created for an earlier application. They often exist on mainframes and are often designed to be accessed via a complex multilayered combination of applications. Using mobile technologies to access these databases can present some severe design and development problems. However, it can also provide powerful capabilities for remote employees and open up new avenues in CRM.

In our August 2000 survey of more than 500 database developers, we found that about 22 percent have already extended legacy databases for access by mobile clients. Considering the new and rapidly evolving nature of wireless application development, this represents a rather large commitment. Even more interesting is the fact that it grows to 37 percent when we asked the same database developers if they felt they would extend legacy apps for mobile access during the upcoming year.



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# Neugents ii: The Brains Behind CA Applications

BY DAVID RUBINSTEIN

Extending its Neugents neural network technology beyond enterprise systems management, Computer Associates International Inc. recently released Neugents ii (Intelligence for the Internet), which the company is positioning as a solution for building intelligent e-business applications.

Where the first implementation of the technology focused on performance of Windows NT systems, Neugents ii takes a more broad-brush approach to solving business problems, according to CA's vice president of e-business management, Carl Hartman.

Hartman described Neugents as self-learning software that can look at a data flow and find subtle patterns, changes and anomalies, which then leads the software to make predictions and suggest possible plans of action to either avoid anomalies or to take advantage of them if they are good.

Hartman added that Neugents ii packages components of CA's Jasmine ii object-oriented database, allowing for a great deal of integration through its ability to connect to popular languages and development tools. If a team is comfortable with Java and WebGain's Visual-Café development environment, he said as an example, it can continue using them. A wizard interface in Neugents ii allows for the creation of a model of the data within an organi-

zation, he explained; that model then becomes an intelligent component that can be built into any application.

One of the key features of Neugents ii, Hartman said, is that it can be the basis of new application development or added into existing applications. "In most IT shops, some 80 percent of the programmers are maintaining existing applications," Hartman said. "The other 20 percent are building new applications to keep driving the business. This solution helps them both out, by providing the ability to create new applications that are inherently intelligent by nature, and making existing applications better through the use of intelligent components we're talking about."

In that context, Hartman said, Neugents ii allows developers to leverage existing resources while continuing to move the business forward. "Every company, except dot-com start-ups, has existing applications. It shouldn't have to throw everything out to get where they want to go."

## CA UPDATES COOL:PLEX

CA (www.cai.com) has also released COOL:Plex 4.5, an update to its development tool for OS/400 and Windows NT/2000. The product was initially developed by Synon Software under the name of Obsidian; Synon was purchased by Sterling Software, which was in turn acquired by CA last April.

New features in the version

4.5 release include the reduction of the overall size of Java applications and an implementation of secure sockets layer (SSL) security. In addition, scalability is improved; CA cited delivery of 1,000 clients attached to a single Windows 2000 server.

"We're targeting the mid-range computing environment," said Wasim Ahmad, director of business management for

COOL application development tools. "With COOL:Plex 4.5, we can address both Java and COM developers."

Other additions include the ability to partition Java applets into multiple files, reducing download time for client applications; the use of JavaBean GUI components in Java clients and AS/400 firewall support.

"Right now, people are cob-

bling things together with Visual Basic and FrontPage and Visual C++," Ahmad said. "This is targeted at teams of developers who want to coordinate better so they can make the best use of best practices as a team." Also, he said, development teams can deliver different types of applications—be they Web, WAP, client/server or Java—from a single design model. ■

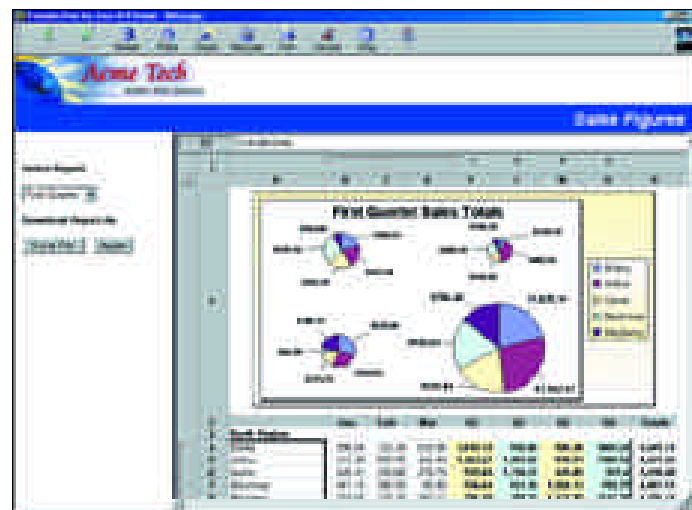
## FORMULA ONE RACES TO NEW DATA SOURCES

Server-side Java spreadsheet generator understands XML, XSLT

BY ALAN ZEICHICK

The latest edition of Formula One for Java, Tidestone Software Inc.'s dynamic spreadsheet application, improves on the product's support for Excel and JDBC sources, and adds the ability to import data from Extensible Markup Language (XML) and Extensible Stylesheet Language Transformation (XSLT) data sources.

Formula One, available since December 1998, is a server-side development suite and run-time application, which collects data from disparate data sources and creates Excel-compatible spreadsheet files. Those spreadsheets can then be distributed via e-mail or FTP, or embedded into Web sites. The spreadsheets contain more than numbers; developers can create formulas and derivative calculations, as well as embed dynamic charts into Formula One's spreadsheets.



A Web page containing a Formula One-generated spreadsheet.

New features in Formula One version 8 for Java include support for new data sources, including XML documents. It can also read XSLT documents to describe the content and format of the XML data. The software can now also output not only Excel-com-

patible worksheets, but also HTML pages, tab-delimited files, and JPEG and GIF-formatted graphics.

"For the first time, it will be possible to connect XML documents to a spreadsheet for processing, analysis and calculations, and then export the results as an Excel spreadsheet," said Joe Erickson, vice president and chief architect at Tidestone (www.tidestone.com).

In addition, the new release decreases the amount of coding necessary to connect the Formula One spreadsheet application with external databases, according to Erickson. A new "data pipe" architecture is said to allow developers to attach cells to data sources without coding; when the source is an XML document with an associated XSLT document, the data pipe can use the XSLT data to filter, format and process the retrieved data.

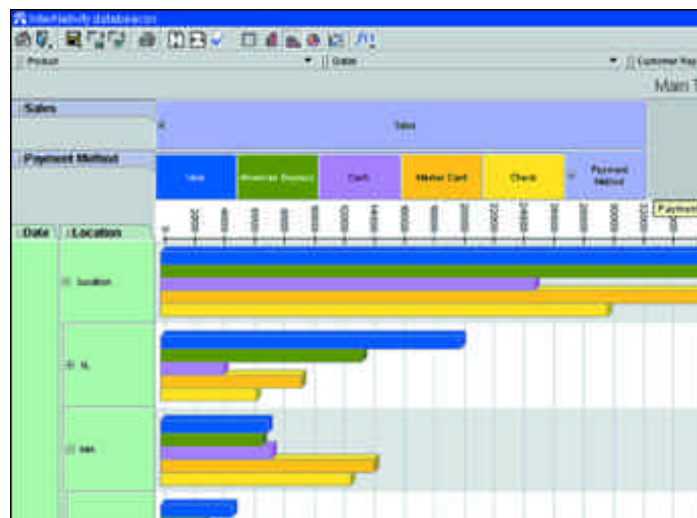
Expected to ship by the end of August, Formula One 8.0 for Java's development kit is priced at \$399, with deployment pricing varying depending on the application and server capabilities. ■

## DataBeacon Adds Multidimensional Charting, Data Analysis

Continuing to expand its server-side data-analysis engine's capabilities, InterNetivity Inc. has released DataBeacon 5.0, which adds new multidimensional charting and analysis capabilities.

According to the company, the premise behind DataBeacon is that it's faster and less expensive to license and deploy a commercial charting and analysis package than to develop one from scratch. Links to the DataBeacon application, along with the relevant dynamically generated data, are embedded into HTML pages; users click links to download a Java-based viewer that allows them to see and customize graphs and charts of the data.

DataBeacon 5.0 began ship-



Multiple sets of data can be compared at one time with DataBeacon 5.0.

ping in late July. Its main new feature, according to InterNetivity, is its ability for multidimen-

sional analysis, which enables the dynamic comparison of as many as four sets of data at one time,

such as in side-by-side bar graphs or text-based reports. Enterprise developers can develop custom chart and graph formats, or preprogram specific multidimensional reports for their customers to view.

For the first time, DataBeacon's Java application offers end users the ability to save data files locally in Microsoft's Excel or Adobe's Acrobat formats, or as comma-delimited or rich ASCII text files. DataBeacon 5.0's pricing starts at \$40,000 per processor, with no per-user costs.

InterNetivity also offers free access to a shared DataBeacon server on its www.databeacon.com Web site, but without the ability for users or developers to customize the charts and graphs. ■

# New SilverStream Tools Turn Legacy Applications Into EJBs

BY DOUGLAS FINLAY

SilverStream Software Inc.'s new Xcommerce development tool, which transforms legacy applications into XML, and its Eportal customer relationship management application suite are designed to help the company maintain its competitive position against integrated e-business platforms from BEA Systems Inc. and IBM Corp.

Fred Holahan, vice president and general manager of its business-to-business solutions division, said that Xcommerce and Eportal were designed to help developers build customized applications rather than continually develop business plans. Xcommerce and Eportal will "permit developers to finally focus on programs that add value to the application, rather than be forced to become business experts at expressing business-to-business integration," he said.

SilverStream's (www.silverstream.com) Eportal is a Java-based application framework that runs on application servers that support Sun's Java 2 Enterprise Edition specification, Holahan

said, and out-of-the-box, it contains 80 percent of the functionality required to construct enterprise and Internet portals. Eportal is a distinct product from SilverStream's Java Application Server, he said, because the server was being used for constructing elaborate Web sites and shopping sites, whereas Holahan's B-to-B solutions division was involved in issues of content management, rules, execution and personalization of the sites. "We reached the conclusion there was enough commonality for creating a Java-based framework that embodied these problems, yet gave developers the flexibility to add customization on top of that," he said.

"Developers can develop business components using EJBs and create interfaces using Java Server Pages," Holahan said, adding the company had "taken the position that the whole framework should do the heavy lifting," automating many business processes so that Java programmers could instead focus on making programs more customized.

Meanwhile, Xcommerce will be responsible for extracting legacy business applications from mainframes and midrange systems and converting their data into XML. "Certainly, in some situations developers will need to be involved in expressing how business-to-business applications are set up," Holahan said, but it will be nothing like the Electronic Data Interchange (EDI) days, where developers had to map and integrate everything, leading to EDI's unpopularity among developers. "The untapped problem now in the application space is how to make COBOL, AS/400 and multiuser Unix applications XML-enabled so they can participate in business-to-business evolution," he said.

One part of Xcommerce is a so-called "hub" that connects any XML application to another via "spokes" that allow applications to become XML-enabled. "Once a developer uses a spoke to put an XML face on the different language application, it can be connected to any other XML applica-

tion through the hub," he maintained.

The benefit, said Holahan, is that Xcommerce and Eportal ease the flow of information to the company's Java Application Server, by converting legacy data to XML, which in turn connects to the Eportal for conversion into EJB e-business components that run on the application server.

Available immediately, Xcommerce is \$35,000 per CPU, while Eportal is priced according to customization configurations. EJB components produced by Eportal will also run on IBM's WebSphere application server

and, according to SilverStream, will soon run on BEA Systems' WebLogic application server.

## XCOMMERCE SUPPORTS ROSETTANET

With SilverStream having joined the RosettaNet consortium, the company's Xcommerce tool will enable developers to integrate RosettaNet XML-based processes with a wide array of other XML exchange vocabularies, to forge real-time connections to enterprise applications and legacy systems, and deploy integration services using standards-based J2EE application servers. ■

## Great Expectations: Linux 2.4 Kernel Due

BY EDWARD J. CORREIA AND DOUGLAS FINLAY

Anticipating the next version of open-source software can be like waiting for your slumping team slugger to start hitting home runs again: You can be fairly confident he's going to, but you're never quite sure when.

So it is with Linux 2.4, the long-awaited update to the popular open-source operating system's kernel. Originally expected this summer, Linux 2.4 by most accounts is late. But according to Red Hat Inc. (www.redhat.com) CTO Michael Tiemann, the technology that is included in the new kernel will make it well worth the wait.

"It's later than people were led to believe last year," said Tiemann, whose company is a Linux provider and is active in its development. "At February's LinuxWorld, Linus Torvalds was confident that we were going to have a 2.4 kernel in July. The good news is that the 2.4 kernel in its preview state is head and shoulders above competing technology," he added, referring to benchmarks using the Tux threaded Web server and a 2.4 beta kernel.

Tiemann characterized performance with single, dual and four-processor systems as record-setting. "The performance is so compelling," he said, "that the 2.4 guys wanted to make sure that all the enhancements that Red Hat put in were part of the standard release."

It is the process of stabilizing

the kernel that is causing the delays, and leading to impatience among some developers. This has led several Linux companies, including Red Hat and Caldera Systems Inc. (www.caldera.com), to release preview versions of their distributions along with beta versions of the kernel.

"We felt it was a good idea to provide software developers a chance to test the software they're writing and get a jump-start on the technologies," said Joe Balif, product manager of Caldera Systems, adding that developers have become "frustrated because it's an open-source project and there are no firm deadlines of when the thing gets done."

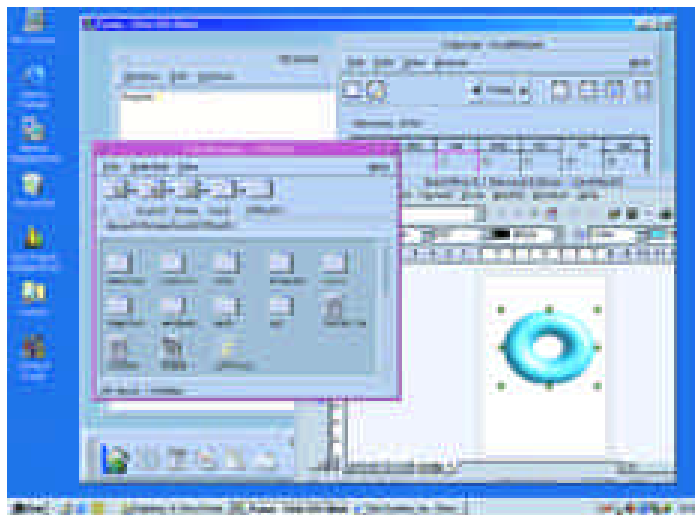
But Tiemann said he feels the community process compares favorably against that of traditional ISVs. "We are just refusing to make a promise, where they simply fail to meet them," Tiemann added that enthusiasm for the new kernel and its capabilities has really begun to gain a broader acceptance.

"It's not just the Linux software development community that wants to make sure that the 2.4 kernel is complete. Hardware companies also are interested that the kernel provides all the drivers and support for the technology that is becoming available. And maybe that is evidence that Linux has finally grown up, because everybody now has an interest in how good and how complete this release will be," he said. ■

## CITRIX EXTENDS METAFRAME TO SOLARIS 8

Continuing to extend its software reach beyond its Windows roots, Citrix Systems Inc. has upgraded its MetaFrame application server to support Solaris 8.0 on both Sparc- and x86-based servers. Previously, the Unix versions of MetaFrame had been limited to running on Solaris 2.7 and Solaris 7, as well as AIX and HP-UX. Citrix also offers a Windows NT/2000 version of MetaFrame, which is at version 1.8 and is on a separate release cycle.

The MetaFrame software family allows many users to run graphical sessions on a MetaFrame server, without the need to install terminal emulation software on the client system. Developed initially for Windows NT Server, which didn't support multiple-user servers, the company later expanded MetaFrame to support AIX, HP-UX and Solaris 2.7/7.0 servers. According to Citrix, the primary benefit to its Unix versions of MetaFrame is that remote users don't require a local X Window terminal or terminal emulation software in order to execute a remote session on the server.



MetaFrame allows Windows users and developers to not only execute their local applications, but also run interactive graphical sessions on Unix servers.

Other new features in MetaFrame 1.1 are improved international keyboard, support, graphical copy-and-paste within MetaFrame sessions and new security features.

A major enhancement in version 1.1 is what Citrix (www.citrix.com) calls "Dynamic" NFuse, which provides a way to publish unmodified applications so that they may be accessed over a Web browser. According

to the company, users in a mixed Windows and Unix environment can then use a single Web portal to access both operating systems' applications. NFuse is also available as a stand-alone server deployment platform for application service providers.

Available now, MetaFrame 1.1 for Solaris is priced at \$4,995 for 15 simultaneous users, with additional user licenses \$200 each. ■

# Learning Java Programming by the Hour

## JavaCon 2000 offering more than 60 sessions, Night School

BY CATHERINE EHR

More than 2,500 application programmers, software development managers and engineers are expected to participate in the extensive technical program at JC2: International Conference for Java Technology 2000 at the Santa Clara (Calif.) Convention Center from Sept. 24 to Sept. 27.

Sponsored by Java Developer's Journal and its publisher, SYS-CON Media Inc., the conference ([www.javacon2000.com](http://www.javacon2000.com)) gets under way with 10 technical sessions ranging from an introduction to XML through "Customizing Your Telephone with Java: Java and JTAPI." The technical sessions then continue through Sept. 27, with 10 to 15 sessions each day for more than 60 sessions and over 100 hours of Java instruction. An Acrobat version of the schedule of the courses available, as well as biographies of the instructors for each, can be downloaded from [www.sys-con.com/javacon](http://www.sys-con.com/javacon).

In addition to the daytime courses, JavaCon offers a 15-course Night School, which can be taken solo or as an add-on to the regular conference program. Sessions run Sunday, Monday and Tuesday evenings for one-and-a-half hours.

And if the 100+ hours of instruction in these technical

and Night School sessions aren't enough Java, there are six keynote events to be held Monday, Tuesday and Wednesday. Sponsored keynote addresses include speakers from Informix, PointBase, Computer Associates, IBM and two sessions from the editorial staff of Java Developer's Journal.

The Exhibition Hall will be the site of the show's special events, as well as the showcase for Java products and tools from more than 40 exhibitors.

At the SYS-CON Radio booth, Java Developer's Journal will hand out its Reader's Choice awards on Sept. 25. The presentation ceremony,

which will recognize the companies and products voted as favorites by more than 20,000 JDJ readers, follows the announcements of these awards at the JavaOne show that was held earlier this summer.

The following day will see the announcement of the winner in PointBase's \$25,000 "Code for the Road" contest. ■

(Editor's note: SD Times is a media sponsor of JavaCon 2000.)

### JC2: INTERNATIONAL CONFERENCE FOR JAVA TECHNOLOGY 2000

[www.javacon2000.com](http://www.javacon2000.com)

#### CONFERENCE:

Sept. 24-27, 2000  
Santa Clara Convention Center,  
Santa Clara, California

#### CONFERENCE HOURS:

Sunday, 10 a.m.-5 p.m. (preconference sessions)  
Monday, 9 a.m.-4:30 p.m.  
Tuesday, 9 a.m.-6:40 p.m.  
Wednesday, 10 a.m.-5:15 p.m.

#### NIGHT SCHOOL SESSIONS:

Sunday, 5:30 p.m.-7 p.m.  
Monday, 6:30 p.m.-8 p.m.  
Tuesday, 7 p.m.-8:30 p.m.

#### EXHIBIT HOURS:

Monday, Noon-7:30 p.m.  
Tuesday, Noon-5:30 p.m.

#### KEYNOTE SPEAKERS:

**Monday**  
Informix Keynote, 8:15 a.m.-9 a.m.  
Bill Hostmann, general manager,  
I.Foundation Business Group

PointBase Keynote, 11:15 a.m.-Noon.  
Bruce Scott, CEO

Computer Associates Keynote, 4:45 p.m.-5:30 p.m. Paul Lipton,  
director of object technology,  
"Java and Corporate Reality"

#### Tuesday

IBM Keynote, 11:15 a.m.-Noon. Rod Smith,  
vice president, Java Software

Panel Discussion, 3:45 p.m.-5 p.m.  
"Real World EJB-From the Masters,"  
with JDJ editors Sean Rhody,  
Jason Westra and special guests

#### Wednesday

Java Developer's Journal Plenary,  
9 a.m.-9:45 a.m. Sean Rhody,  
editor-in-chief, JDJ



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# Perl 6: New From the Ground Up

Rewritten scripting language will interface with COM, CORBA

BY DOUGLAS FINLAY

Larry Wall, co-creator of the Perl language, announced on July 18 at O'Reilly's Second Open Source Conference that Perl would get a major overhaul and rewrite, making it leaner and more simplified to interface with such component systems as the Common Object Request Broker Architecture (CORBA) and Microsoft's Common Object Model (COM). The announcement ended months of speculation begun by fellow Perl creator Chip Salzenburg that the language was headed for a total rewrite.

According to the Perl 6 Web site (www.perl.org), the first language specification draft will become available Oct. 14.

A popular language with a loyal following among many developers, Perl—thought of primarily as a scripting language—is being rewritten because it has become difficult for developers to add new functionality, according to Brian D'Foy, spokesman for Perl.org, the official Web site for the Perl community, adding that Perl's

size, not its maturity, had become a liability. "Perl 5 is now a significantly large chunk of code, much more so than when it was first designed. Adding something to the existing code is getting to be tough," he said.

In his announcement, Wall indicated that both the internals and the externals of the language would be rewritten. Of the internals, Dan Sugalski, one of the lead developers for Perl 6, said, "The C code that implements Perl is getting on; it's 6 years old in spots. All sorts of features not in the original release of Perl 5 have been tacked, bolted and welded on." He said it had gotten to the point where making major additions was very difficult to do without breaking existing code.

Concerning external development, Nathan Torkington, interim project manager of Perl 6, said that while Perl 5 was developed largely by Wall, a newly created Perl 6 development team brainstormed on the structure so that all developers would have a voice in its creation. "We're starting fresh with Perl 6," Sugalski added, "and the

community and the culture we build will have a strong influence on what Perl 6 becomes."

He said developer groups would be created that would feature chairpersons, follow deadlines and aim for specific goals. "A development culture weighted heavily toward glue languages will build a different version of Perl than one that leans toward objects, or functional programming or numerical processing." He said the development team would be able to glean the best ideas from all approaches.

While it's been reported that Perl 6 would be rewritten in C++ from its original C, Sugalski said, "It's far too early to tell in a project this size to be talking about code. It may be C or it may be C++."

Perl.org spokesman D'Foy maintained that Perl 5 support would still continue through a specific maintenance track available at the Perl Web site, and added that "Perl 5 support will also be maintained by companies such as ActiveState Tool Corp. [www.activestate.com], through several support packages." ■

## MySQL Adopts GNU General Public License

BY DOUGLAS FINLAY  
AND ALAN ZEICHICK

MySQL, long a popular open-source database server, is making new strides toward corporate acceptance, thanks to a relicensing of the software using the GNU General Public License, commercial support from Progress Software Inc. and VA Linux Systems Inc., and a new commercial distribution of the code now being offered by AbriaSoft.

MySQL is an open-source development project managed and promoted by Monty Widenius in Finland, David Axmark in Sweden and their Swedish company MySQL AB (www.mysql.com). As of MySQL version 3.23.19, MySQL AB, in partnership with software vendor Progress Software, has relicensed the MySQL source using the widely accepted GNU General Public License's provisions.

Progress' role, according to MySQL AB, is to provide up to \$2.5 million to help further the development of MySQL. As part of that investment, Progress has established a wholly owned

subsidiary, NuSphere Corp. (www.nusphere.com), which will not only assist MySQL AB with the future development of MySQL, but will also develop its own commercial distribution of the database, to be called NuSphere MySQL.

According to NuSphere, the new distribution will be available for Linux, Unix and Windows. The company will offer the NuSphere MySQL for free download as both binaries and source code, and will also offer paid support and training for database developers and administrators.

VA Linux Systems Inc. is another partner in growing MySQL and MySQL AB. VA Linux has made a financial investment in MySQL AB, and will host the MySQL projects on its SourceForge.net Web site. SourceForge.net is a collaborative environment geared toward supporting open-source development.

### MYSQL LITE


Just as Linux has a number of separate and competing com-

mercial distributions, from companies such as Corel, Red Hat and SuSE, so is MySQL going that same route. In late June, AbriaSoft, a division of Unitek Information Systems Inc., released its own version of MySQL. Called Abria MySQL Lite, the distribution includes not only MySQL 3.22, but also phpMyAdmin, a tool for Web-based administration of the MySQL database server, as well as the Apache Web server, version 1.3.12 and Perl 5.00503. The AbriaSoft distribution is designed to run on Red Hat Linux version 6.x or later.

Abria MySQL Lite is available for free download from http://abriasoft.com. AbriaSoft is also partnering with O'Reilly and Associates to distribute AbriaSoft's MySQL Standard, which includes "mysql," a book written by Randy Jay Yarger that provides an introduction to SQL and covers the principles of relational databases. In addition, AbriaSoft will be selling MySQL computer-based training courses on CD-ROM. ■

## News Briefs

### COMPANIES

**Bluestone Software Inc.** and **XMLSolutions Corp.** plan to integrate their products so that customers can more easily exchange real-time data between EDI- and XML-based systems.  The integrated offering will assist customers



who have invested in electronic data interchange technology and now want to establish broader business relationships using XML for data exchange. Bluestone's Total e-B2B will be enhanced with XMLSolutions' XEDI Translator and Schema Central products, and the new release is expected later this year. . . . **Empress Software Inc.** and **LinuxWorks** have collaborated to release the Empress Relational Database Management System on Blue Cat Linux, a version of the operating system designed for embedded development. . . . **International Software Group** is changing its name to **Attunity Ltd.**, which the company believes better reflects its business-to-business strategy. Earlier this year, ISG acquired **Bridges for Islands Inc.** and its XML B-to-B engine. . . . **Microsoft Corp.** has shipped its first software developer kits for the Xbox video game system that is scheduled to ship in the fall of 2001. The XDK is based on Intel and VVIDIA chip design and Microsoft's DirectX API development tools. . . . **Softquad Software Ltd.** is sponsoring six XML Boot Camp sessions, traveling five-day training courses for XML and Java programmers. Produced by the Software Development Media Group of **CMP Media Inc.**, classes will be taught by John Evdemon, Tom Gaven, Drew Munro and Jeffrey Ricker. The XML Boot Camp will visit the following cities: Chicago, Sept. 11-15; Austin, Texas, Oct. 2-6; Santa Clara, Calif., Oct. 9-13; and Bellevue, Wash., Oct. 16-20. . . . **Data Junction Corp.** is launching its inaugural user conference, "Integration 2000: Putting It All Together," a two-day event Oct. 12-13 at the Radisson Hotel in Austin. Sessions will focus on XML, application integration, legacy transformation messaging and streaming data. The keynote speaker will be Ron Powell, publisher and editorial director of DM Review, a data management publication.

### PRODUCTS

**WebGain Inc.** has released version 2.5 of its **TopLink** object-to-relational database mapping tool for the **WebLogic Server 5.1** and **Enterprise 5.1** application servers from its former parent company, BEA Systems Inc. TopLink is compatible with Java 2 Enterprise Edition application servers and offers support for XML-based deployment descriptors and enhanced EJB finder-type options for dynamic querying. . . . In a limited offer from The Breeze Factor, customers purchasing **Breeze XML Studio Enterprise Edition Developer License** for \$495 will receive a free copy of Extensibility Inc.'s **XML Authority**, normally priced at \$99. With these tools, developers can design advanced XML structures and generate Java classes that simplify the use of XML, the company said. The offer is good until Sept. 30. . . . **Bristol Technology Inc.** has released **eXactML 1.2**, which allows C++ to use XML by generating object-oriented interfaces for reading and writing XML content based on any DTD or schema. The eXactML development environment runs on Windows; the resulting source code can be compiled on Linux, Solaris and Windows. A single developer license starts at \$695. . . . **GreenPoint Inc.** has introduced **WebCharts v2.5**, a data visualization tool for publishing interactive reports and applications on the Web. It is integrated with Microsoft's Visual InterDev and FrontPage 2000. The tool uses XML as its native data format, and its Design-Time Control supports Visual InterDev's Scripting Object Models for Dynamic HTML and Active Server Pages, allowing for connection to other page objects. . . . **Secant Technologies Inc.** has announced **Extreme Internet Server (EIS)**, a Web application server that supports Java Servlets and Java Server Pages. EIS allows you to automatically route customer requests to any available and functioning server. It supports BSD Unix, Linux, Solaris and Windows NT/2000. . . . **TurboLinux Inc.**, in partnership with IBM Corp., is making available **TurboLinux DataServer** with **IBM DB2**.



► continued on page 33

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# WinRT-USB Toolkit Pre-empts Hardware Device Drivers

BY DOUGLAS FINLAY

With the Universal Serial Bus (USB) 2.0 next-generation specification for connecting PCs and peripherals now finished and 2.0 hardware showing up in

beta, BSquare Corp. has released its WinRT-USB toolkit for Windows 98 and Windows 2000 to enable developers to write specifically to USB hardware while bypassing device

driver kits from Microsoft.

Josh Buerger, BSquare's senior software engineer, said that hardware manufacturers are increasingly releasing beta hardware based on the USB 2.0

spec developed by the USB Promoter Group ([www.usb.org](http://www.usb.org)), which includes Compaq, Hewlett-Packard, Intel, Lucent, Microsoft, NEC and Philips Semiconductors. He believes the

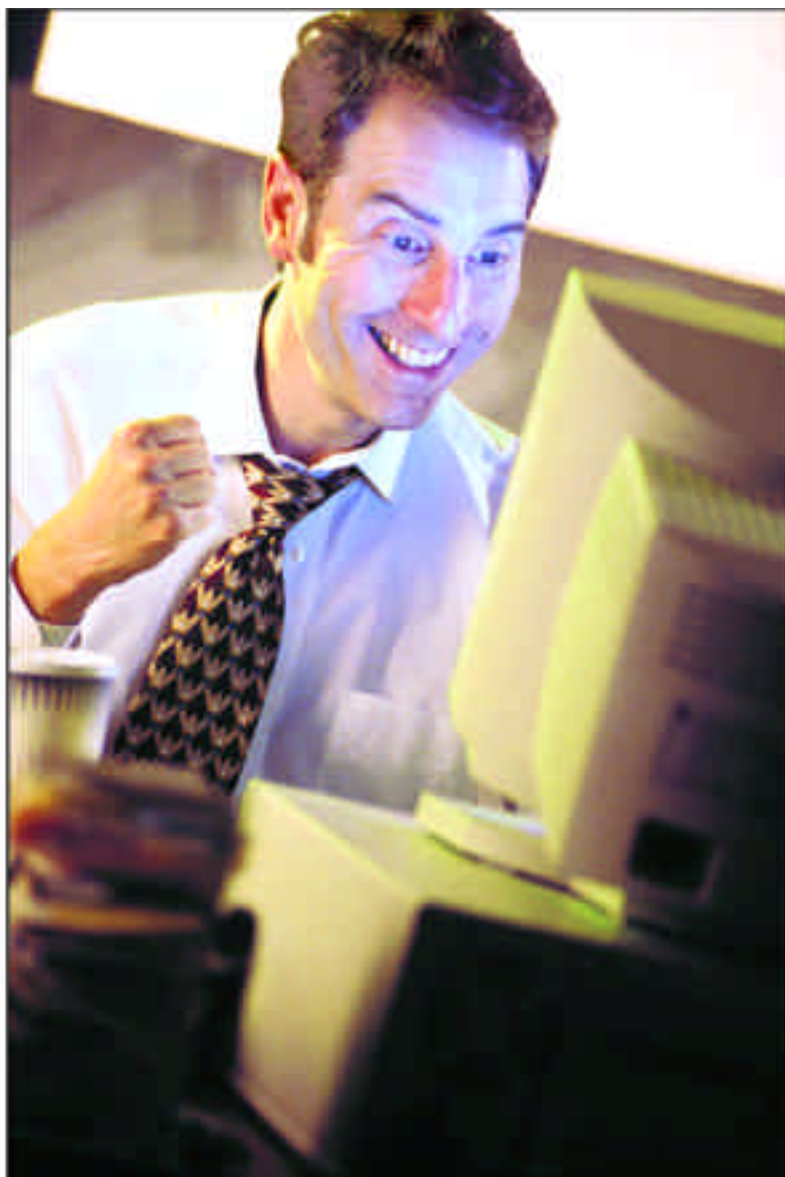
USB 2.0 specification will be released by December. He said that with Microsoft's Device Driver Kits (DDK) focusing only on big consumer devices such as printers, screens and mice, WinRT-USB would help developers focus specifically on such hardware devices as fingerprint sensors and medical instruments not supported by Microsoft's DDK.

"With WinRT-USB you don't have to build a device driver," he said. "Developers can skip the entire portion of the device-driver development process." Instead, Buerger added, WinRT-USB tools provide a device driver and easy-to-use device-access functions that bypass device-driver development—which can take months—so that within hours hardware code can potentially be completed.

"Instead of developers going to MS DDK to build device drivers, WinRT-USB provides higher-quality hardware code much more quickly to enable developers to concentrate on issues such as moving data and interfacing with their own devices," Buerger said.

Buerger said WinRT-USB can be written to several languages. "People get very passionate about their preferred development environments, so we fulfill many language needs by working in MS visual tools, Inprise/Borland's C++ Builder and even Ada compilers."

WinRT-USB is available immediately at a cost of \$1,495. A demonstration is available for download at [www.bsquare.com](http://www.bsquare.com). ■



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## Inprise Ships App Server 4.1

Inprise Corp. ([www.inprise.com](http://www.inprise.com)) has made available its Application Server 4.1, based on Enterprise JavaBean (EJB) and CORBA technology.

New features include support for the Wireless Access Protocol (WAP), enhanced EJB transaction support, an integrated Java Messaging Service (JMS) implementation, a transaction manager supporting JDBC 2.0, and advanced object-to-relational mapping for EJBs as well as support for other third-party O/R mapping tools. Pricing was not available. ■

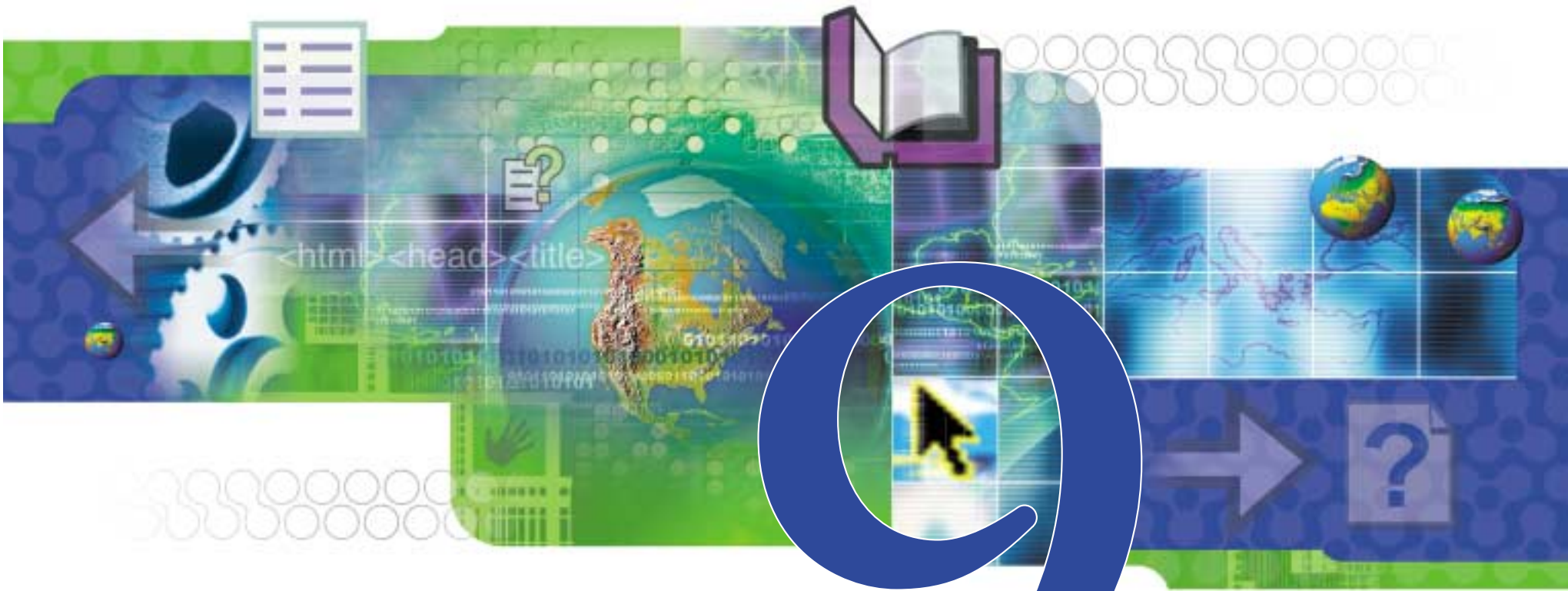
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# ESPIAL TO TOP INTEL DEVICES

## Java RAD tools to ship with StrongARM reference platform

BY EDWARD J. CORREIA

Score another design win for Espial Group Inc. On the heels of its June announcement of a five-year software deal with Motorola, the company has signed a pact with Intel Corp. to include its embedded development tools in an Intel reference platform based on Intel's SA-1110 StrongARM system-on-a-chip.

Under terms of the agreement, Espial will supply Intel with its complete line of PersonalJava-based development, service deployment and management tools, including Espresso, Espial's lightweight GUI toolkit; its Architect RAD environment;

Escape 4.0, a full-featured Web browser; and DeviceTop, the company's Internet appliance service delivery and management platform.

Mal Raddalgoda, senior director of strategic marketing at Espial ([www.espial.com](http://www.espial.com)), said that Intel wanted to offer its development platform as a complete solution that included Java-based software tools. "Intel recognized, as did Motorola, that Java is strategic technology and that our solution is one of the best," he said. "Because let's face it, software sells hardware. And Intel recognized that we can help them sell more chips."

The kit will be targeted at

OEMs building small computing devices, including smart phones, PDAs and other wireless and handheld Internet appliances. In return, Espial will collect per-device royalties of between \$2 and \$10 from OEMs bringing products to market. The reference kit software will carry the branding of both Intel and Espial, but finished goods may be OEM branded. All hardware and software will be supplied by Intel, and Espial will receive no revenue from sales of the kits.

This revenue arrangement is unlike the Motorola deal, Raddalgoda said, which also differed in the technology involved. "The Intel relationship involves today's PersonalJava technology; the Motorola involves K-Java technology, which we will be delivering in October," he said, referring to Sun's connected limited device configuration (CLDC) specification. Motorola is funding Espial's development of its software for wireless devices according to the Sun specification. Terms of the agreement also permit Motorola to sell Espial software directly to its OEM partners.

The Intel reference platform will center around the SA-1110 StrongARM CPU, originally developed by Digital Equipment Corp. The SA-

1110 is the first Intel-designed version of the chip since Intel acquired DEC in 1998. The core processor is integrated with a memory and PC Card control module; system control module with 28 interruptible I/O ports; a power management module; and a peripheral control module featuring a six-channel DMA controller, LCD controller and UART, IrDA and USB interfaces. The development kits are expected to begin shipping sometime this month.

"And Intel is a great partner to have from a brand-recognition and credibility point of view," Raddalgoda said, adding that until its acquisition in 1998 of StrongARM from DEC, "Intel had

not really been a major player in the embedded market, but StrongARM was." According to research provided by Venture Development Corp., demand for the ARM/StrongARM architecture grew by 53 percent from 1998 to 1999, making it the fastest-growing processor in the embedded industry.

"ARM and StrongARM are the dominant players. [Intel is producing] a specific reference platform targeted at smart phones, built on Java. This has direct implications. Part of Intel's strategic position is as a PC and information appliance company. They recognize that StrongARM is really the future; you're not going to get Pentiums into handhelds." ■



Espial's GUI development suite will accompany Intel's SA-1110 PDA platform.

## Metrowerks Unveils Road Map for Linux

Metrowerks Corp. demonstrated beta versions of CodeWarrior 4.1 for x86 and PowerPC targets running Linux and unveiled its road map for Linux products at last month's Linux-World Conference in San Jose, Calif. According to the company, its Linux IDE for the PowerPC is the first of its kind.

The company also exhibited a new rapid application development environment for Java and a high-end debugger for x86 applications running Linux. Metrowerks ([www.metrowerks.com](http://www.metrowerks.com)), a subsidiary of Motorola Corp., is scheduled to release

its Linux development tools sometime next year. Pricing has not been set.

The news comes on the heels of the company's release of the CodeWarrior Learning Edition, a version of its IDE targeted at first-time programmers. The IDE supports C, C++ and Java, runs on Windows and MacOS hosts, and includes a computer science advanced placement package designed to help high school students prepare for college entrance exams. The package sells for \$49 and is available now. ■

## What MicroC/OS-II Does for OnCore

### New API opens mature RTOS to modern hardware

BY EDWARD J. CORREIA

Embedded RTOS developer OnCore Systems Corp. has added the MicroC/OS-II operating system to its supported list. The open-source API will permit applications written for the MicroC RTOS to take advantage of modern hardware by way of the OnCore Microkernel Foundation.

The MicroC/OS is widely used in avionics control systems, which require a bulletproof real-time operating environment, according to Phil Parker, vice president of marketing at OnCore. "We are working with Validated Software, [MicroC/OS-II author] Jean Lebossa's

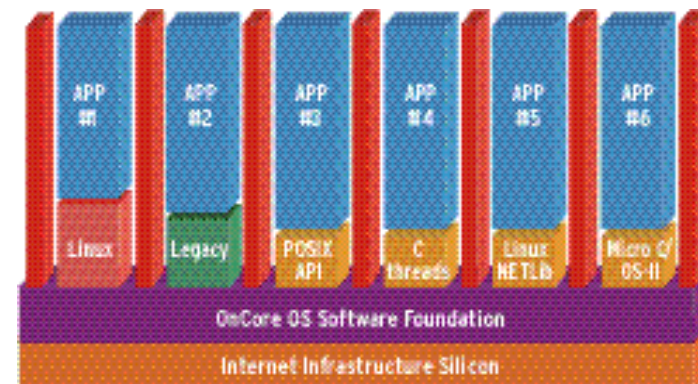
company, and we are offering all the documentation to allow [programmers] to develop a certifiable product that is compliant to FAA certification standards," said Parker, describing the certification process as extremely strict and rigorous.

The MicroC/OS-II API permits developers to immediately migrate their applications to OnCore's protected-memory environment without modification, according to the company. Its crash-safe environment is achieved, Parker said, by leveraging the memory management units in the host processors. The environment supports x86 and many PowerPC processors,

the most recent of which include IBM's PowerPC 750CX and its new line of PowerPC 405 embedded system-on-a-chip processors.

"Most of the operating systems in the world for embedded systems were designed for older processors or do not utilize the functionality of memory protection or memory management," said Parker. "We created an interface that allows MicroC/OS applications that are already in use to run more robustly in a protected memory environment on today's processors and to co-exist with Linux applications and other real-time applications."

The microkernel also per-



OnCore foundation permits multiple operating systems and applications to run in protected memory environments.

mits Linux and Unix applications conforming to the POSIX API to execute concurrently on the same processor with communications between memory partitions being handled by the foundation.

Chip Downing, president of OnCore ([www.oncoresystems.com](http://www.oncoresystems.com)), said the foundation and

its aviation industry-certifiable API also can be used as a debugging environment for applications prior to deployment on microdevices running just the MicroC/OS-II RTOS. Pricing for the OnCore Microkernel foundation starts at \$4,000 per seat and includes an integrated development environment. ■

# Linux Stack Enables Real-Time IP Networking

New Lineo open-source tools include small-footprint utilities to mimic desktop Linux

BY EDWARD J. CORREIA

Embedded Linux developer Lineo Inc. has released for beta testing RTnet, a modification to the Linux networking subsystem that permits embedded devices to communicate in hard real time using Internet protocols over Ethernet. According to the company, this represents the first time that such communications have been possible using nonproprietary operating systems.

"We wanted to extend the

hard real-time ability from a single system to a distributed processing environment," said David Beal, product marketing manager for real-time solutions at Lineo. "RTnet allows you to [use] one computer to collect the information and another to act on it."

The technology uses standard 10/100 Ethernet on a dedicated network, Beal



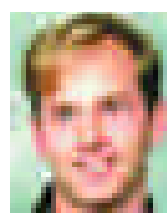
**With RTnet, Lineo extends hard real time to multiple systems, says Beal.**

said, and supports several popular Ethernet card brands, including 3Com.

According to Lineo, RTnet supports IP, ICMP and UDP protocols, and provides real-time tasks with an implementation of sockets, including an interface nearly identical to the standard Linux sockets interface. The report said that RTnet is expect-

ed to communicate with existing network stacks and works with Linux 2.2.x kernels and with both RTAI 1.3 and RTLinux 2.3.

To further assist embedded developers, Lineo also recently released BusyBox, a collection of common utilities that have been reduced in size and combined into a single executable to act as a replacement for Linux utilities.



**BusyBox lets us focus on our core solutions business, says Lineo's Anderson.**

Erik Anderson, senior software engineer at Lineo, said that BusyBox solves an important problem for embedded developers. "The problem with the standard utilities is that they include tons of features which are great when you are on the desktop, but are bloat when you are on an embedded system. You simply don't have the space for that type of stuff."

According to Anderson, BusyBox occupies about 228KB of memory with all of its features turned on. When compared with the standard Linux utilities, providing the same set of functionality would require more than 2MB of memory. This was accomplished, Anderson said, by removing certain convenient—but otherwise unnecessary—features from Linux functions, such as colored type in directory listings. "This is a facilitating piece of software that enables us to focus on our core business, which is selling custom solutions," he said.

BusyBox also is configurable, with the ability to permit developers to include just the functionality needed for their application. "When it comes to embedded systems," Anderson said, "there is no 'one size fits all.' You just can't anticipate all the things that people could do with a system. You just have to give the power to the people. BusyBox allows you to carefully tailor your embedded system for exactly what you're doing."

Currently at version 0.46, the latest release offers improved portability between Linux 2.4 and earlier versions, and several of its components have been reworked. According to a company report, its modular design permits commands, and features may be added or omitted at compile time to help reduce footprint. All that needs to be added to create a working system is a kernel and editor.

The prerelease RTnet code and BusyBox can be freely distributed under the GNU general public license and are available now along with documentation. RTnet can be downloaded at <http://opensource.lineo.com/rtai.html>. BusyBox can be found at <http://busybox.lineo.com>.

## IBM Boosts Free VisualAge ME

Platform will support Hard Hat Linux, WinCE, SuperH, ARM

Reinforcing its commitment to offer free Java developer's tools that cover a wide variety of target devices, IBM Corp. has added support for MontaVista Software Inc.'s Hard Hat Linux to its J9 virtual machine, the central component of the VisualAge Micro Edition integrated development environment.

In an agreement unveiled at last month's LinuxWorld conference in San Jose, Calif., MontaVista is free to distribute the IDE with its embedded Linux and will handle low-

level developer support. The two companies will work together to port the IDE to processors supported by MontaVista software.

The announcement closely follows the news that IBM had added Hitachi's SuperH and Intel's ARM embedded processors to a list that already included x86, Hitachi SH3/4, MIPS and PowerPC targets. The company also recently added support for Microsoft's Windows CE; iTRON, a popular industrial RTOS in Japan; and the PalmOS from Palm Inc.

According to Kim Clohessy, vice president of embedded systems at IBM subsidiary Object Technology International Inc., the news was designed to show that "we aren't just a single-operating-system, single-processor offering; the product has broad applicability." IBM broke new ground when it announced in June that it would grant free run-time licenses for unlimited use on IBM WorkPads and the Palm III, V and VII handheld devices.

The free VisualAge ME

includes a complete set of Java class libraries and J9, IBM's configurable JVM, which can be scaled down to suit the target device and the application. According to the company, developing to the J9 VM eases porting because of its consistent code base across platforms.

IBM is not the first company to produce a JVM for Windows CE. In March at the Embedded Systems Conference, Insignia Solutions Inc. introduced Jeode Embedded Virtual Machine, a plug-in for Internet Explorer 4.0 for Windows CE.

The latest versions of the VisualAge Micro Edition can be downloaded at [www.embedded.oti.com/download/zone.html](http://www.embedded.oti.com/download/zone.html).

## INTERMEC SCANS THE SMALL-DEVICE MARKET

Miniature bar-code engine shifts the point of sale to consumer's pocket

Intermec Technologies Corp. has released the MaxiScan i6 scan engine, a low-power, solid-state LED-based bar-code scanner suitable for embedding in even the smallest handheld devices. The tiny scanner is about the size of a sugar cube.

The first application Intermec will produce for the scan engine will be a key-fob device capable of scanning and storing data from as many as 100 bar-code labels. Information stored in the device can be retrieved by docking the device with a PC, where an application can read the key fob's memory.

But the tiny device has its shortcomings. "The main drawback is that you must provide the

sweeping motion. You've got to drag the device across the bar-code, whereas the laser scan engine generates its own line. Also, the LED engine would be considered a contact-type device," said Dan Bodnar, vice president of marketing at Intermec ([www.intermec.com](http://www.intermec.com)). "And MaxiScan is limited to one-dimensional bar codes; it recognizes UPC, EAN, Code 128 and Code 39 bar codes only," he added.

"It's a pretty good trade-off for having significantly less power drain," Bodnar said, adding that the engine consumes about 15 milliamps at 3 volts, about one-tenth as much power as small laser-based scanners.



**Intermec's scanner uses about one-tenth the power of others, says Bodnar.**



**Intermec's Lilliputian bar-code scanner stores data from 100 bar-code labels.**

The MaxiScan i6 scan engine is available now to OEMs for between \$25 and \$50 in quantity and is accompanied by an integration guide, which includes details about power supply voltage requirements, mounting guidelines and interface information for capturing

data coming from the device. Intermec also includes a Windows-based utility for programming the engine's ROM with settings and symbology preferences. The engine also can be programmed using special programming bar codes, Bodnar said.



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# Prosyst Adds Novell's Directory Services to mBedded Server

BY DOUGLAS FINLAY

Looking to give consumer appliance companies a means to manage thousands of devices in need of repairs or upgrades, Prosyst USA's mBedded Server, a small-footprint embedded

server that supports the Jini specification, Universal Plug and Play (UPnP) and the Wireless Application Protocol (WAP), has added Novell's Directory Services.

"We will be incorporating

Directory Services into the mBedded Server to enable the management of millions of consumer devices on the Web," said George Reel, director of sales for Prosyst USA's (www.prosyst.com) embedded ser-

vices. Explaining that it is currently possible for developers to access and communicate with devices through IP addresses on a one-to-one basis, he said it is a nearly impossible task to find a specific device in

need of maintenance, something Directory Services would be able to do.

Directory Services addresses not only the network management of devices but also the security surrounding proprietary information to send to the device, said Keith Sculli, marketing director.

Reel suggested that Directory Services on the mBedded Server will enable developers and administrators monitoring medical equipment, for example, to identify the precise device in need of repair, diagnose the problem and send patches to it securely by encrypting the information at the server end for decryption at the device end.

As an example of how Directory Services would be used in a business context, it could enable retail information about pricing to be sent to specific devices, such as cash registers, which would then reflect price changes. "If the cash register is Jini compliant, each of the cash registers would need little intelligence, such as a processor or memory, because Jini machines

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**The mBedded Server sits in the middle of home-appliance activity.**

would be able to talk with one another," Reel said.

The Jini specification describes a method of spontaneously networking a variety of hardware and software through the use of the Jini look-up service.

Reel said the new Directory Services would enable developers to bring development costs and development time down. With Jini, UPnP and WAP already on board, and "with the mBedded Server utilizing Directory Services, developers only need to concentrate on developing applications," he said.

Available now, Directory Services can be added to an mBedded Server, enabling it to communicate with other servers running Directory Services. ■

# ESC 2000: Spotlight on Appliances

## Emphasis on integration of embedded systems into everyday life

BY CATHERINE EHR

In late September, hordes of embedded systems programmers will once again descend on the San Jose (Calif.) Convention Center for the 11th annual Embedded Systems Conference. From Sept. 24 to Sept. 28, more than 14,000 attendees will meet, greet, mingle and learn about the latest advances in tools and design for embedded systems.

Keynote speaker Neil Gershenfeld, director of the Physics and Media group at the MIT Media Lab, is slated to discuss the integration of embedded computing into our everyday environments, even into our clothing and furniture, in his speech titled, "When Things Start to Think." This exploration of the future of embedded sensing and computing devices is scheduled for Sept. 26 at 6 p.m.

On Sept. 25, a panel of open-source and royalty-based software vendors, as well as developers, will debate

"The Open-Source Movement: Boon or Bane for Embedded Systems Developers?" Bill Veghte, vice president of Microsoft Corp.'s embedded and appliance platforms group, will speak Sept. 27 on "Device Connectivity."

The technology focus of this year's event is the design of Internet appliances, with more

than 40 of the 155 available classes and tutorials aimed at this area. More than 100 other sessions will cover such diverse topics as wireless design, open source, and software and programming basics. Conference staff expanded the class offerings this year, and 58 of the courses are new, according to the conference organizers.

On the first two days of the conference, there are six full-day tutorials offered, ranging from the new "The Wireless Web" course through "TCP/IP Networking" and "Managing Embedded Projects." Classes will include "Developing Embedded Software in Java," "Wireless Web Technologies and Applications" and "Pre-

dictable Real-Time System Design." Each class is 90 minutes long, allowing participants to take a couple of classes each day and still have time to check out the exhibits.

More than 400 exhibitors are expected at this year's show, up significantly over last year's 320 companies.

The growth has forced CMP Media Inc.'s Electronics Group to move the conference to San Francisco's Moscone Center for 2001, and it will take place in the spring instead of the fall. ■

## EMBEDDED SYSTEMS CONFERENCE 2000

[www.embedded.com/esc.htm](http://www.embedded.com/esc.htm)

### CONFERENCE:

Sept. 24-28, 2000  
San Jose Convention Center, San Jose, Calif.

### CONFERENCE HOURS:

Sunday through Thursday,  
8:30 a.m.-5:30 p.m.

### EXHIBIT HOURS:

Tuesday, Noon-8 p.m.  
Wednesday, 10 a.m.-7 p.m.  
Thursday, 10 a.m.-4 p.m.

### KEYNOTE SESSION:

Tuesday, 6 p.m.-7 p.m. Neil Gershenfeld,  
"When Things Start to Think"

### SPECIAL GUEST LECTURE:

Wednesday, 6 p.m.-7 p.m. Bill Veghte,  
"Device Connectivity: A Vision"

### PANEL DISCUSSION:

Monday, 6 p.m.-7:30 p.m.  
"The Open-Source Movement: Boon or  
Bane for Embedded Systems Developers?"

### SHOP TALK SESSIONS:

Monday, 7:30 a.m.-8:30 a.m. Jean  
Labrosse, "Programming Conventions"

Tuesday, 7:30 a.m.-8:30 a.m.

Bill Gatliff, "Is Free Software 'Really'  
Happening in Embedded Systems?"

Wednesday, 7:30 a.m.-8:30 a.m.

Carolyn Duby, "UML and the Real World:  
Costs and Benefits"

Thursday, 7:30 a.m.-8:30 a.m.

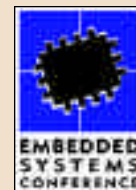
Michael Barr, "Language Selection Issues"

### SHOW FLOOR RECEPTION:

Tuesday, 7 p.m.-8 p.m.

### ATTENDEE PARTY:

Wednesday, 7 p.m.-9:30 p.m.  
Tech Museum of Innovation



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## EDITORIALS

## Congratulations, BEA

When Sun Microsystems withdrew Java from the formal standards process and set up its Java Community Process, one natural criticism was that the company was going to stack the deck. Sun's developers still come up with most of the ideas for Java 2 Micro Edition and Java 2 Enterprise Edition, and Sun has seats on all the JCP committees. It's only natural to believe that Sun's developers have the inside track and extraordinary influence into new and emerging specifications.

With that said, few wondered why, until late July, the only company whose products passed Sun's rigorous J2EE certification tests was Sun Microsystems Inc.'s joint venture with America Online, iPlanet, and its iPlanet Application Server 6.0.

Of course, Sun wants more companies to pass the J2EE compatibility suite. And the more companies that can pass the J2EE test suite, the more powerful the J2EE brand will become, the more Sun's claim of "write once, run anywhere" will ring true, and the more money everyone makes from Java.

That's one reason why we're surprised that Sun isn't making a big deal about BEA Systems Inc.'s passing the J2EE certification. You'd think that Sun's Java team would be crowing about BEA's success as an example of the openness of the Java platform. *Au contraire*. Nary a word about BEA could be found on the <http://java.sun.com> Web site, other than a reprint of the company's press release.

Sun's Java site, branded as "The source for Java technology," is, in the final analysis, all about promoting Sun's own products, and Java just happens to be one of them. BEA may be a Java licensee, but it's also a competitor. Sun isn't doing well at managing the natural conflict.

## Is WAP the New XML?

We all know that technology goes in phases, with something new and innovative capturing popular mind share from something that *used to be* new and innovative. When that happens, the older technology is considered to have gone mainstream. It's still cool, but it's not trendy. It's not your father's Oldsmobile; it's your big brother's SUV.

Two years ago, Java carried the torch before passing it to Linux, which about a year ago passed it to the Extensible Markup Language. Is XML ready to pass the new-and-innovative torch to WAP?

All the signs are pointing in that direction. The Wireless Application Protocol comprises two parts: a thin communications protocol modeled after HTTP, and a data-description language called the Wireless Markup Language, or WML. WML is designed as an XML application, able to describe the meaning as well as content of data.

Until WAP-enabled devices are plentiful, the technology is unlikely to gain a foothold with enthusiasts, who powered the Web, Java and Linux revolutions. (XML was unique among recent development fads in that it was primarily driven by enterprises, not individuals.) But with early WAP devices beginning to be deployed, and as an increasing number of development and testing tools appear on the scene, it's just a matter of time before enterprises find themselves not only having to support WAP, but finding it a business-critical deployment platform. ■

## GUEST VIEW

## WIRED FOR WIRELESS

Nowadays, it seems everyone has an arsenal of wireless communications tools. People are stockpiling mobile phones, personal digital assistants (PDAs) and other wireless devices like kids hoarding Halloween candy. By 2003, more than 1 billion people will be using mobile phones. In fact, 600 million of these folks will soon access the Web via their wireless wonders, compared with only 400 million PC users.

As more people catch the wireless bug, companies are dialing into the endless possibilities of mobile commerce (m-commerce). Consumers can check traffic conditions, send e-mail and look at stock quotes while waiting in line at the grocery store. On the B-to-B side, companies can enjoy greater efficiencies and faster time-to-market, thanks to information available in real time.

But shifting gears to a wireless architecture is a move some companies are understandably hesitant to make. Constantly shifting technologies and protocols may make these businesses eager to cut the wireless connection altogether.

Luckily, the approach to developing wireless applications is amazingly similar to designing traditional e-business systems. Although developers must learn new usage models and technologies, core requirements remain the same: scalability, security, availability, flexibility.

In fact, wireless raises the bar for application performance. Gone is the traditional "pull" model in which applications merely responded to user interactions. Businesses can use their wireless to "push" precisely targeted information to their customers, partners and suppliers. An airline can instantly notify a worried passenger that the last flight out of Baghdad has a seat open. With hundreds of millions of users demanding such instant service, the world of wireless gives the term "availability" a whole new meaning.

## WHAT WIRELESS NEEDS

To deliver on demand, wireless applications must be based on an architecture that is:

- Channel-neutral: Businesses need to deliver information and services using the same infrastructure to multiple channels

(Web data over the wired Internet, and wireless data to portable devices).

- Adaptable: Wireless applications must be designed to support new improvements and emerging standards in wireless technology with minimal rework and minimal disruption to business process and users.

- Available: As consumers and businesses pull the plug on traditional e-business, wireless technology with its packet-switched protocols gives users "always-on" access. Therefore, wireless applications need an infrastructure that does not go home at night.

Effective wireless application architectures, like onions, come in layers. Built correctly, these application architectures can save developers quite a few tears (unlike the onion). The leading choice for a layered architecture is the Java 2 platform, Enterprise Edition (J2EE). Layered by definition, J2EE is a component-based architecture that separates the presentation content from the underlying application. J2EE also supplies critical services such as messaging, security, back-end connectivity and transactional capabilities.

## IT'S NOT THAT EASY

Slapping a J2EE label on an application server doesn't guarantee the wireless architecture of your dreams. J2EE is a powerful mechanism for creating a channel-neutral platform to support wireless (and wired) applications. But the application server architecture itself is just as critical as meeting a laundry list of standards. When you're shopping around, consider factors of scalability, load balancing, delivery mechanisms and availability...all the same requirements associated with more traditional business systems.

With a projected six times the traffic of traditional Internet applications, wireless will have a heavy load to carry. Leading application servers today offer mechanisms to offset these staggering scalability requirements. For example, they may use clustering to break scalability barriers with various architectures ranging from hardware redundancy to multiple virtual machine (VM) architectures.

Sophisticated transactional support for wireless applications is also critical. Stock quotes, flight availability and other transactional data must be available in real time to millions of mobile clients. Data sharing among various components of a wireless application is greatly simplified when the application server contains a persistent storage mechanism, such as a shared object cache. This type of storage device ensures data integrity since multiple applications and channels have efficient access to the same objects and events. The shared object cache also forms a foundation for data sharing and asynchronous messaging.

With the sheer number of anticipated users, wireless application performance must maintain an even keel. Intelligent, fine-grained load balancing found in leading application servers optimizes performance and reliability by minimizing bottlenecks and ensuring optimal use of all system resources.

## GETTING THE MESSAGE

Getting the message across in a wireless world can be a tenuous task. Therefore, wireless applications and services demand a particularly robust, asynchronous, message-based architecture with a guaranteed delivery mechanism.

As a result of the interrupted nature of wireless connectivity, wireless applications need extensive built-in intelligence. To preserve session data and help minimize lost context, the application server must be able to transparently persist session state and provide buffering. XML parsing and support should also be built into the application server. And using the Java Messaging Service (JMS) API from the J2EE standard on the server and a lightweight Java client in the device, businesses can ensure bullet-proof delivery of wireless services, data and transactions.

Finally, wireless applications are at the mercy of the mobile clients' whims. They'd better be there, ready to provide uninterrupted access to services, any time of day or night. Businesses can't give the usual (albeit,

► continued on page 21



PAUL CHAMBERS

## THE GRAND SCHEME

Although many embedded projects are one-offs, many aren't, but are part of a product family developed simultaneously or sequentially. Take a look at many of the embedded devices in popular use today. For example, cell phones are designed in versions for specific telecommunications standards and diverse markets and feature sets.

Although new products and high-end products might appear dissimilar to older, lower-end devices, many of those functional changes are enabled mainly through software. Planning and designing the software architecture of embedded systems with the explicit goal of having the device be part of a product family would, therefore, seem to be an obvious and intuitive task. Yet it's not common practice. Instead, code is written to implement today's requirements, and not as part of a general solution. When the next version of the embedded device is needed, the code is largely rewritten.

"Software Architecture for Product Families" is an attempt to solve the problem that devices are designed, architected and coded largely as individual systems. Not a textbook, this dry and humorless book is actually a report on a project called ARES (Architectural Reasoning for Embedded Systems) carried out in Europe and funded by the European Commission. The project's goal was to understand the challenges faced in product-family embedded development in industrial settings, and then to offer some rough solutions.

Let's see if any of the challenges identified by the ARES team sound familiar: difficulty in developing variations of software for similar products; managing the explosion of different product versions; low degree of code reuse, despite functional similarity and use of object-oriented

design tools; inability to predict or control performance of large distributed real-time systems; lack of conformance between original design documents and final implementation; and inability to recover an existing system's software architecture by examining its source code.

Start "Software Architecture" with the case studies at the back of the book. The best is in Chapter 5, where van der Linden relates the experiences that Philips Research Laboratories had in attempting to develop a general software architecture for mass-market television sets. The problem Philips faced was that many of the architectural decisions existed only in the minds of the architects—making it impossible for the software designers and programmers to strictly adhere to the architecture. Worse, there were no tools available to help. It was also very hard to train new software engineers to develop the TV's code. It's a broadly applicable problem and fascinating to read about.

Once Chapter 5 has given a good idea of the practical implications of the architectural difficulties, go back to the beginning. Chapters 1 to 4 discuss the broad challenges and key concepts.

The ARES project developed a four-part metamodel of software architecture, explained in the first chapter: architecturally significant requirements for construction, use and evolution; key concepts for understanding the system; structure of the components and how they are integrated into a complete system; and the texture that makes the components consistent and manageable.

Building on that framework, the authors explore architecture description languages, or ADLs,

which provide a formal level of abstraction for dealing with complex systems. The book doesn't recommend any particular ADL—and, in fact, claims that no existing ADL does a good job of accommodating product families, as opposed to individual products. Plus, many ADLs are internally developed and domain specific. The authors do emphasize the need for formal ADLs, and the requirement to find or build software tools that can work with the ADLs, and then present two ADLs: Darwin and Koala.

The third chapter goes into the key concept of software architecture assessment, or ensuring that an architecture meets the metamodel requirements introduced in Chapter 1. It's a tough issue, and one that has had little research up to now. Any good assessment technique needs to take into account both functional and quality requirements, often ascertained via metrics, prototype experiments or other means. The book does an excellent job reviewing this important area.

Finally, Chapter 4 delves into the challenge of software architecture recovery, or the techniques and processes required to uncover an existing system's architecture based on available information, including reverse-engineering and exploration of a system's major properties. Why is that important? Documentation of an existing system is one reason, as well as assessing if an existing system truly meets current requirements. Other reasons include maintenance, preparation of modification or evolution of the system, or building a replacement system or new members of the product family.

Of course, examining a sys-

tem can tell you how it was built and can help unveil some of its requirements, such as for redundant data paths, or for real-time performance of certain tasks, but that examination can't tell you *why* it was built that way. Still, the ARES project has performed valuable work, including the development of an architecture recovery framework for product families, which begins with the examination of individual systems, and then a process of identifying family vs. individual system architectural properties.

Now it's back to Chapter 5, the first of the three case-study chapters. The Philips case was about the development of an architecture description language. The Nokia Research Center focused on family architectural problems in the telecommunications giant's switching systems and handheld cellular telephone families. Asea Brown Boveri presented the company's challenge and success in recovering the architecture of a family of embedded real-time locomotive control systems.

If your organization produces families of embedded products

and would like to formalize the architecture of those product families to improve quality, reduce costs, ensure that the systems better meet broad requirements, and simplify the maintenance and evolution of these product families, this is an important book to read, particularly for readers with a clear understanding of the fundamentals of software architecture. The authors are to be commended for producing such a clear treatment of a complex topic. ■

"Software Architecture for Product Families." Mehdi Jazayeri, Alexander Ran, Frank van der Linden. Addison Wesley 2000. Hardcover, 258 pages. \$44.95.



ALAN ZEICHICK



## WIRED

◀ continued from page 20

valid) reasons of system failures, maintenance and upgrades.

The application server is a critical link in minimizing downtime; it should provide failover capabilities at the system (server) level and at the software process level.

Hot application updates further contribute to an available infrastructure for wireless

applications. With J2EE you can download different application versions to client devices and upgrade them dynamically as your wireless requirements change and grow. Some application server architectures deliver this same capability for servers, enabling the site to keep running while a new application is being deployed.

Wireless devices, like the Internet, are here to stay. Adding mobile devices to your

technology mix can open up revenue sources you've only dreamed about. Using a layered architecture and the right J2EE application server, you'll have the infrastructure you need to keep those millions of wireless users dialed in. ■

Paul Chambers is chief technical officer (Europe) at Gem-Stone Systems Ltd., a Brokat Company. He can be reached at paulc@gemstone.com.

## WHAT DO YOU THINK?

SD Times welcomes feedback. Letters must include the writer's name, company affiliation and contact information. Letters may be edited for space and style and become the property of BZ Media.

Send your thoughts to letters@bzmedia.com, or fax to 516-922-1822. Please mark all correspondence as Letters to the Editor.

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### BZ Media LLC

2 East Main Street  
Oyster Bay, NY 11771  
516-922-2101 • fax 516-922-1822  
www.bzmedia.com • info@bzmedia.com

### Publisher

Ted Bahr  
516-922-2101 x101 • ted@bzmedia.com

### Editor-in-Chief

Alan Zeichick  
650-359-4763 • alan@bzmedia.com

### Executive Editor

David Rubinstein  
516-922-2101 x105 • drubinstein@bzmedia.com

### Senior News Editor

Edward J. Correia  
516-922-2101 x100 • ecorreia@bzmedia.com

### Associate News Editor

Douglas Finlay  
516-922-2101 x112 • dfinlay@bzmedia.com

### Copy Chief

Patricia Sarica  
516-922-2101 x106 • psarica@bzmedia.com

### Art Director

Mara Leonardi  
516-922-2101 x109 • mleonardi@bzmedia.com

### Editorial Projects

Catherine Ehr  
cehr@bzmedia.com

### Columnists

Andrew Binstock  
abinstock@pacificdataworks.com

J.D. Hildebrand

jdh@sdtimes.com

Oliver Rist

orist@grand-central.net

David Strom

david@strom.com

### Contributing Writers

Alyson Behr  
alyson@behrcom.com  
Jennifer deJong  
jdejong@vermontel.net  
Lisa Morgan  
lisamorgan@mindspring.com  
Rebecca Rohan  
rrohan@bitcave.com

### Advertising Sales Representatives

Western U.S./Canada  
Julie Fountain  
831-469-3669 • jfountain@bzmedia.com  
Northeast/North Central U.S./Canada  
David Karp  
516-922-5253 • dkarp@bzmedia.com  
Southeast U.S./Europe  
Elizabeth Pongo  
516-922-5254 • epongo@bzmedia.com

### Director of Circulation & Manufacturing

Rebecca Pappas  
516-922-1818 • rpappas@bzmedia.com  
Circulation Assistant  
Phyllis Oakes  
516-922-2287 • poakes@bzmedia.com

### Office Manager

Cathy Zimmermann  
516-922-2101 x108 • czimmermann@bzmedia.com

### Customer Service/Subscriptions

888-254-0110 • service@bzmedia.com

### Editorial Design

Paul Donald • Graphic Detail  
paul@detaildesign.com

### Bookkeeping Services

Adam Grisanti • Kiwi Partners Inc.  
agrisanti@kiwipartners.com

### Marketing Graphics/Design

Mark Zarembo • ZVC.com  
zarembo@frie.com

### Article Reprints

Reprint Management Services  
717-399-1900 • sales@rmsreprints.com

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## BZ Media

### President

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# Application Servers Come of Age

As vendors in the Java camp standardize around EJB and J2EE,  
how do you tell one product from another?

**A**sk Web-based businesses what they're looking for in an application development environment and they will tell you that only three things matter: time-to-market, time-to-market and time-to-market.

To that end, a dozen or more vendors have rushed to their rescue, offering application servers that dramatically simplify—and thus speed up—the process of building today's enormously complex Internet applications.

With the exception of Microsoft, which incorporates its application server in the operating system, vendors have delivered standards-based products built around Enterprise JavaBeans (EJBs) and Java 2 Enterprise Edition (J2EE). That makes it easy to integrate Web applications with existing back-end databases on which such applications depend—without having to write a great deal of custom code.

But with the proliferation of Java-based application servers, a fundamental question—one that occurs in any standards-based market—is arising: How do vendors differentiate their offerings from those of their competitors when they all base their products on the same programming environment?

Application server vendors once competed on the basis of technology, building home-grown products on top of Unix or Windows. "But now, at the basic level, app servers are more and more alike," said Tom Murphy, program director at market research firm Meta Group Inc.

## TICK OFF ALL THE BOXES

And the similarities don't end with the technical specs. Increasingly, vendors are beginning to position their products not as application servers per se, but as the central piece of a comprehensive e-business platform. Not every vendor takes this approach. And those that do, don't necessarily offer every piece of the platform. But as these suites evolve, they tend to vary less and less, including prebuilt components for commerce, integration, personalization, content management and more. "There is a



BY JENNIFER DEJONG

checklist, and everybody has to tick off all the boxes," said Mike Gilpin, vice president and research leader at Giga Information Group.

"For the most part, we don't go out and sell an application server," said Valerie Olague, program director of business transformation product marketing at IBM Corp., which has built its e-business platform around its WebSphere application server. "We sell solutions around building e-business platforms, incorporating integration technology," she added.

The move toward standards and prebuilt components is driven by the demand to deliver working Web applications in time frames that developers considered absurd just a few years ago.

"In 1997 people still had 12 to 18 months to develop a project, but now projects are happening in a 10-week time frame," said Phillip Bride, director of product marketing at GemStone Sys-

tems Inc. (www.gemstone.com). The company's application server, GemStone/J, is geared to building high-volume B-to-B Internet applications.

"In order to meet the deadline, you have to be very savvy, designing applications that allow you to add components over time," he added.

While vendors admit that products are becoming increasingly similar, they say that the move toward standards is a good thing for customers. "It gives [them] a high degree of confidence, knowing that the stuff you build on [our platform] will not be high risk," said John Capobianco, senior vice president and chief marketing officer at Bluestone Software Inc. (www.bluestone.com). The company's application server is part of Bluestone's Total-e-Business platform.

"A standards-based approach allows customers to do things the right way from the start," added Erik O'Neill, senior product manager for Visibroker

and Inprise Application Server at Inprise Corp. (www.inprise.com). As new standards are brought in, they will become increasingly important. If you have nonstandard bits and pieces, that convergence can't happen, he said.

What's more, said Giga's Gilpin, the cradle-to-grave approach—integrating the application server as part of an e-business development platform—keeps customers from having to manage a large number of vendors for different pieces of the pie. "That was too time-consuming and expensive," he said.

As the new approach to application servers replaces the old, and businesses continue to bow to market pressures to keep their Web sites current, a shift is occurring. Customers base application-server buying decisions more on business benefits than on technical specifications.

"What we've done is standardize on all the boring bits, so people can compete on what matters," said Bill Roth, who is group manager for Java 2 Platform, Enterprise Edition at Sun Microsystems Inc. "History has shown you receive no competitive advantage from having, say for example, your own set of APIs."

Although Kim Sheffield, vice president and general manager of the application server division at SilverStream Software Inc. (www.silverstream.com), does not disagree, he said, "It's going to be a couple of years until the J2EE market is really boring—it is less than a year old."

The company's e-Business Platform, geared to portal sites, comprises the SilverStream ePortal, the SilverStream xCommerce product line and the industry-standard SilverStream Application Server.

## WHAT MATTERS?

Generally speaking, vendors and analysts agree that it is just "the techie stuff" that is being standardized, leaving plenty of room for differentiation. They say application server vendors compete on the basis of rapid development, fast performance, outstanding development

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## APP SERVERS

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skills and a high degree of adaptability, allowing developers to easily alter applications as business demands change.

In other words, just because products are all written to the same standard and are often packaged as part of a suite, they are not all equal. "The quality of the implementation matters—you have to have competitive performance and scalability," said Gilpin. "These things are nontrivial to do well," he added.

BEA Systems Inc. (www.bea.com) believes that while time-to-market is a huge factor, the issue is overemphasized. "Speed doesn't matter if you don't deliver systems that are reliable and adaptable," said John Kiger, director of product marketing at BEA's e-commerce server division. "With Web applications, the need for adaptability is greater than ever before," he added.

The company's WebLogic application server is widely considered an industry leader. It was the first Java development environment to hit the market, gaining a 32 percent market share in 1999, according to Giga Information Group. By the end of 2000, Giga predicts that

IBM's WebSphere will catch up, each player owning a 24 percent share.

Giga expects the application server market to grow by 180 percent, year to year, driven by the widespread adoption of products based on EJB and J2EE. The research firm also predicts that a fair amount of consolidation will occur.

### CHECKING REFERENCES

Because issues such as "quality of implementation" and "speed of development" are largely subjective, market share and customer references are, of course, the big competitive advantages. Buyers look at your customer list, with an eye toward those Web businesses that are most similar to theirs, said Kiger. BEA Systems counts e-Trade and Amazon.com among its customers.

It's also common to compete by targeting a certain niche of the market. "There is an undercurrent—if everyone is doing the same, does it matter who you buy from?" said Vernon Imrich, director of product strategy at Percussion Software Inc. (www.percussion.com).

"But standards are just a small piece of the problem a customer has," he said. You have to focus on the business problem. The company targets Web busi-

nesses that need to manage huge volumes of content on their sites. Percussion's Rhythmyx Content Manager is built using the Rhythmyx Integrator, a native XML application server, which simplifies building dynamic content-driven applications for the Web.

And, of course, price matters. Application servers don't come cheap. They run anywhere from \$10,000 to \$35,000 per processor, said Giga's Gilpin. And while neither he nor Meta Group's Murphy believes customers buy solely on the basis of price, vendors that package their offerings with services have a huge advantage. "IBM can say, 'We will give you WebSphere for free if you will hire global services to do the implementation,'" said Murphy. "It is hard to compete with that."

### HIRING THE TOP TALENT

In order to build the best application servers, vendors need to attract the top Java talent. While Java is widely considered to be the fastest-growing development environment, it is still in its early years. And the shortage of skilled programmers is expected to last well into 2002, according to GartnerGroup Inc.

And it's not just a matter of finding

programmers who know Java. "Because EJB and J2EE are so new, there are few people out there who can really design and architect things well," said GemStone's Bride. "You have to be able to build an application that is modular, where you can easily add and take away components—to design applications for dynamic and complex changing environments," he said.

Of course, it's not just the vendors who face that problem. To build, deploy and maintain Web applications successfully, customers need not just a solid development platform, but also the ability to attract, retain and grow serious Java talent for the long haul.

Ultimately, the ability to deliver that resource will be a huge competitive advantage, in terms of how application server vendors continue to evolve their development environments as well as which vendors can best compete in the service arena.

Where are all these developers going to come from? With its DeveloperWorks program, IBM is counting on teaching old dogs new tricks. "There are millions of COBOL programmers out there," said Olague. "We are reskilling them to build Java applications." ■

## THE MICROSOFT WAY TO WEB APPLICATIONS

John Montgomery, Microsoft Corp.

Microsoft Corp.'s answer to a Web development environment is to integrate what it calls its core application services with Windows 2000. Those services include COM+, Internet Information Services (IIS) 5.0, Microsoft Data Access Components (MDAC) and Microsoft Message Queuing (MSMQ). The company says this represents only part of its Web application server solution, noting that it also provides a database in SQL Server and a rich set of developer tools in Visual Studio. Its newly announced .NET enterprise servers, including Application Center 2000, BizTalk Server 2000, Commerce Server 2000, Exchange Server 2000, Host Integration Server 2000 and Internet Security & Acceleration (ISA) Server 2000, will round out the solution when they hit the market next year.

It's no surprise to learn what Microsoft thinks of the Java approach to app servers. And of course no one in the Java camp sees eye-to-eye with Microsoft, either. Analysts said that choosing sides comes down to what kind of shop you are running. Microsoft has an advantage in that it doesn't have to deal with openness. "That is the upside of controlling so much of the technology," said Mike Gilpin, vice president and research leader at Giga Information Group. But, because this approach to application development creates a lot of

dependencies in making things work together, it doesn't make as much sense for mainframe and Unix shops as it does for those with NT environments. He added that when it comes to e-business applications, Unix and the mainframe still rule.

We talked to John Montgomery, lead product manager at Microsoft, about the company's Web development strategy. Here's what he had to say.

### SD Times: What is the benefit of bundling application services into the operating system?

**John Montgomery:** It makes it easy for developers to build on your platform. If you look at the evolution of operating systems over time, you see more and more features getting pushed into the operating system. That avoids duplication of effort. [Take, for example,] the unified printer model in Windows. Word-processing vendors don't compete on the basis of their printer drivers, so they were happy [when Microsoft embedded them in Windows]. It's really a matter of developers climbing up the value chain. As developers get more sophisticated, they are duplicating efforts.

### Efforts are being duplicated in the Java camp?

Yes. If everyone is building to the same specification, how do you differentiate? You have to compete on value-added features. The basic infrastructure of computing has become

incredibly complicated—companies don't want to hire engineers to build [the infrastructure for, say,] transactions and queuing. So it makes sense to embed those sorts of things in the development environment.

### That results in faster performance?

It's hard to compete with us on performance. We beat [everyone] in the DocuLab results. And of course you can't beat us on price.

### What is your response to the enormous growth that is occurring the Java camp of application servers?

Here are some statistics: A quarter of the sites on the Internet are running on the Microsoft platform. And 40 percent of the Fortune 500 run their sites on the Microsoft platform. There are 6 million developers out there who can [write to our application development platform].

### They are Visual Basic developers?

There are 3.2 million Visual Basic developers out there, but we are language agnostic. There's C++—you can use COBOL, if you want to.

### Compared with, say, about 1.6 million Java developers?

Java is still an immature language.

### Can you talk about what the .NET development environment will offer?

This is an important advance in our application services strategy. It's our next-generation platform for building, deploying and running scalable Web applications. We have gone through and looked at some of the stuff that

made developers' lives hard and addressed it at a deep level. The result is improved productivity—you'll write fewer lines of code and get more out of the ones you do write. It will go into beta this fall. Already, just at the technical preview level, we are seeing new Active Server Pages that are three times as fast as they are now.

### The goal is, of course, to help Web developers beat time-to-market deadlines?

Time-to-market—the time it takes till you can begin measuring your first hits—will be measured in days. The other app servers measure time-to-market in months.

### What's your view on what will happen, given the number of vendors in the Java camp?

You'll see more and more consolidation—for vendors to be competitive you need features that others don't have. You don't get that by recompiling source code that one vendor sends you.

### What is your strategy around some of the added services, such as personalization and content management, which Java vendors build around their application servers?

We see those as services that don't have to be delivered as a bunch of bits on a CD. We will deliver them as continuous services over the Internet, much like Passport. When you log in, your preferences would be carried over from other services like CarPoint.

—Jennifer deJong

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# Developers Vie for Global Work in New Marketplace

BY DOUGLAS FINLAY

ITSquare.com Inc. has launched a Web exchange that enables companies to find independent software developers to whom to outsource their work—especially work with global requirements.

Called Globalization Square, the site acts as a marketplace where clients get help from project facilitators who attempt to match the needs of the project with software developers qualified in specialties such as setting

up foreign-language Web sites or transactions. "From a software developer's point of view, this is an entirely new channel for them to get business," said Harvi Sachar, ITSquare's (www.itsquare.com) CEO.

Sachar said that software developers traditionally rely on salespeople to generate new business. But with ITSquare, developers can access the Web site, see projects of interest they wish to work on and begin

collaborations or negotiations with the client to work out the business details of the project. He called the Web exchange a customized channel in which developers are "able to get the work they want and work with whom they want."

Sachar said that the Web site is much more than a simple bid station because once the business is bid on and negotiated, project facilitators help track the entire project to its conclusion. "Because it can be difficult for software developers to be completely successful, we have to be sure we are with them through the whole life cycle, beginning to end," he said.

Developers who successfully negotiate are charged up to 15 percent commission by ITSquare for their work, depending upon the fee received. Sachar argued that developers using Globalization Square will get a better value because the service will speed the development process and work to ensure its success.

But Greg Runyan, a senior analyst at the Yankee Group, expressed reservations about the credibility of such an Internet model to attract qualified candidates and match them with clients at all.

"It's not a surefire thing because it's a new model," Runyan said. "These bureaus, or agencies, that farm out temps like ITSquare require a typical screening process to make sure you have competent people that are available." He said there is still a level of trust that has to be determined in the online arena, making business success fundamentally more of a challenge.

While Sachar said that project facilitators include ex-developers and business people who have worked at acquiring global business, Runyan countered that it will take much more than these types of workers to create an image of credibility for such an Internet model. He said the dynamic of sourcing human capital is very challenging.

"It's not selling product by any means," he said, adding that ultimately, it is hard to quantify what is wanted or needed in terms of human capital.

In addition to Globalization Square, the ITSquare site, launched in July 1999, features Linux Square, launched in June, to help clients seek out Linux contract developers. ■



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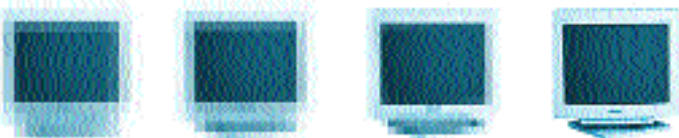




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# SoftwareMarkets Hosts, Catalogs Apps

## New company creates ASP brand that joins users, developers

BY DAVID RUBINSTEIN

Taking the concept of matching developers with custom software projects into the application service provider (ASP) market, new company SoftwareMarkets this

month will begin recruiting teams of developers to help create a catalog of applications that it will host on a Web site under its brand.

"We'll be casting a net very

wide and quickly filtering a best-of-breed community of developer teams," said CEO and founder David Doust, whose vision is to create a quality label of applications for

small businesses to license plus a stable of qualified developer teams to create them. As there is always a fear of the unknown in contracted, third-party development, Doust envisions a certification process that will assure the developers are knowledgeable and able to deliver the application.

Doust said it is the hosting of the applications under a brand—which connotes quality, support and service—that differentiates SoftwareMarkets (www.softwaremarkets.com) from such matchmaking services as ITSquare.com and Flashline.com.

Small development teams will benefit from the platform and SoftwareMarkets' business model, according to vice president of marketing Paola Lubet, because they can concentrate on their core competencies and not worry about marketing and distribution. Doust said the software authors retain ownership rights, with SoftwareMarkets charging a commission as one revenue stream. Another revenue stream, he said, will be from the cost paid by the users of the application, based on existing ASP models.

SoftwareMarkets is emphasizing team development, Doust said. "We're a little bit up the chain from a guy moonlighting. We want the apps built by a team, because many skills are required for successful development. Meanwhile, specification gathering, advanced betas, all of these things can be organized for the developer, and we can get worldwide feedback on the applications in development."

Doust said SoftwareMarkets will provide the development platform, which will be Java 2 Enterprise Edition compliant; rapid application development tools; and a set of services such as quality-assurance testing and training facilities. Building the platform based on standards, he said, does not lock developers into any one tool set or operating system, and lets the developer choose between writing for portability or performance. The platform also offers support for HTML, XML, WAP and Macromedia's Flash.

For users, the benefits are cost, availability and support. Small businesses often cannot afford in-house application development, yet they find that going to an ISV for a custom application can be very expensive. "The big benefit is we can get the cost of applications down from tens of thousands to perhaps \$10 a month," Doust said.

Lubet said the development platform is in beta release, "to make sure that by the end of September when we're ready to have developers on board, the platform will be in the production stage." ■

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# ActiveWorks Mainframe Integration Server Opens Up Host Apps

Active Software's new features map utilities for clients, speed transmission of requests

BY DOUGLAS FINLAY

Active Software Inc., under a definitive agreement to be purchased by WebMethods Inc. no later than Sept. 30, is unveiling the ActiveWorks Mainframe Integration Server (MIS) that features new technologies to bring mainframe host applications into the distributed computing arena, which is essential for e-commerce applications as well as for enterprise application integration (EAI).

"With approximately 98 percent of the Fortune 1,000...

companies' applications residing on mainframes, they are quite concerned to see startups coming in and eroding their market share simply by being dot-com companies using e-business applications," said Chris Pottinger, technical evangelist for Active Software's MIS. He said the need is great among these companies to move more quickly into the e-business arena by leveraging their legacy applications, and utilizing them within the e-commerce environment.

Mainframe Integration Server is based on two proprietary technologies, Direct Transaction Mapping (DTM) and Distributed Transmission Routing (DTR), which map host applications to expose them to client-side requests as well as speed transmission of those requests, respectively.

Considered essentially a mapping layer, "Direct Transaction Mapping formats abstracted information from the host into a mapping utility that can be used for development," Pot-

tinger said. "Companies look to reuse rather than re-engineer their applications to make them more remote procedure-like. DTM enables developers to discover what's already available in the mainframe by allowing the sharing of source code in CICS, such as COBOL copybooks or Basic Mapping Services." He said developers could then take those sources and build mapping logic that is exposed to client-side transactions.

DTR expedites throughput, Pottinger said, by finding the shortest transmission path possible to get to the host, enabling multiple host transaction requests and responses to occur simultaneously.

Because the typical mainframe environment involves tightly incorporated business logic and network interfaces in which networking protocols and applications are intertwined, MIS isolates the two, he said, so application developers can look at business logic and data models, rather than concern themselves with SNA-based communication protocols.

"MIS eliminates the need to write message and communication protocols because within the code stream the logic is very simplified to perform simple requests and reply back as objects, rather than to ask about

the states of things," he said. He said a further advantage to developers is to be able to look and see what host messages look like rather than have to go to COBOL developers and request them. "Once you've created host-side applications, the usage is open to many new forms of business logic," Pottinger said.

With applications exposed in this fashion, he said Java developers as well as Visual Basic developers could utilize the legacy information to create new forms of e-business.

An API sits on the client side exposed to the mapping utility. "Within the Active Works integration broker, the brokerage has an element called business process," he said. The element can be defined as a host transaction, as a request to the host and as a reply back. He said MIS takes that element and maps it to the host transaction. "So, we're really the glue among the broker, the EAI broker and the mainframe."

Cost for MIS starts at \$75,000 and scales based on the number of brokers being used. Presently operating in the Windows NT environment, Pottinger said the company (www.activesoftware.com) is working on versions for Unix and IBM's OS/390. MIS is expected to be available this month. ■

## COMPUWARE

◀ continued from page 5

"One of the fundamental problems Web developers have is in component development, when it touches multiple machines," said Compuware's Turner. "The Web server talks to the app server, which talks to the components...What is a developer to do when a transaction expected to take 4 to 5 seconds takes 40 to 50 seconds? How will he determine which code is running poorly? DevPartner can answer that question within minutes."

### TESTING, TESTING

As part of its drive toward offering more QA/QC tools, Compuware plans to release TestPartner, a testing tool that will

be integrated with both DevPartner Studio and the company's QACenter.

Completing the life cycle is the ability to understand, monitor and measure all aspects of an application's performance in an actual production environment, Turner said. Whether on a desktop, server, network or the software that runs across that multitiered environment, developers and managers can track issues relating to performance.

To that end, Compuware acquired Optimal Networks Corp., which made two products—ApplicationVantage and ApplicationExpert—that Turner calls complementary to Compuware's EcoSystems code analysis products.

ApplicationVantage leverages EcoScope's ability to pinpoint network or application issues by drilling down the code level and showing where in the application the performance problem is. ApplicationExpert does much the same thing in a preproduction environment, said Brad Johnson, EcoSystems product line manager. ApplicationExpert also has a response time predictor to see how applications will behave; this test usually is performed just prior to rollout, Johnson said.

The two products are already shipping, Johnson said, while the company works on branding and packaging. Other Optimal products should be merged into Compuware packages over the next year, Turner said. ■

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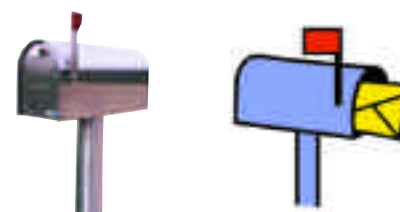
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## NEW HOME BASE FOR CONSUMER APPLICATIONS

Sometimes it seems as though there are people in the world who actually enjoy giving me headaches. Like the guy in PC Support who thought it was a good idea to purchase (not lease, mind you) a whole pile of new notebook PCs preinstalled with Windows NT Workstation 4.0. Where has this man been living? If there is one operating system that was never meant to reside on a laptop, that's it. And after running a pre-SP1 Windows 2000 install on a notebook for a bit, I've come to the conclusion that Windows 98 is the only Redmond operating system that makes any sense on the road—today, at least.

But for those developing for consumers, there's a new sheriff in town, Windows Me, which stands for the Millennium Edition. According to various Microsofties, this is the next release of the Windows 98 kernel and should be the last version of the Windows 95 product family before Microsoft moves to a single code base centered on the Windows NT/2000 code base.

Consumers and developers alike should eventually warm to the \$110 Windows Me as Microsoft has taken pains to make this its easiest operating system ever. Where Windows 2000 uses a friendly front end to hide a maze of new feature complexities, Windows Me aims to auto-

mate—and at the least “wizardize”—its features more than any previous Redmond operating environment.

Predictably, a large chunk of this new ease-of-use focus is aimed at multimedia support, since that term and “home user” have pretty much become synonymous. Setting up scanners, digital cameras and PC-oriented music devices is more plug-and-play than ever. In a more general sense, the new help system is truly a marked improvement over previous versions. While you still don't always escape the nonhelpful error message descriptor, the new help index and search features do represent a real step up from Windows 98 Second Edition.

Microsoft has also added a new feature, called System Restore (SR), which will affect disk usage a bit, but not enough so it will be that noticeable to the end user. Instead of forcing users to fall back onto a truncated Safe Mode or even a DOS prompt reboot after a desktop crash, System Restore allows them to simply restart with an older, working configuration. SR manages this by taking a disk image of the system every 10 hours or at user-specified intervals. To use SR, users simply reboot into a Safe Mode and run the SR wizard. This restores the sys-

tem to an older system file configuration, while maintaining up-to-the-minute versions of data and application files.

The disk image, as well as Windows Me's need to compress and store files that users may have “deleted” from program directories, can affect user performance perception if the system is a bit older or the operation is large. But frankly, this is a small price to pay if it keeps tech support calls to a minimum. In addition, MS has included a File Protection feature that's basically swiped from the Windows 2000 feature of the same name. This helps keep users safe by preventing new applications from overwriting key system DLLs. While this protects users, it might have an effect on programmers looking to modify such files for their specific applications, though

Microsoft has published guidelines to developers on how to properly interact with these new Me features.

But while Microsoft has spent considerable effort improving Windows Me's functionality once it's running, my playtime with the software showed they probably should have spent a little more time making sure the installation procedure was solid. Another key problem is its support for home-oriented broadband Internet access.

An installation that upgraded an existing Windows 98-based HP Pavilion desk-

top PC (admittedly with over 24 installed applications and a local as well as wireless network connection) tossed its proverbial cookies no less than four times before finally installing, albeit shakily, after I deleted three beta applications from Microsoft and IBM. Backing up data files, wiping the disk and then running a native install ran fine the first time around, but Windows Me crashed twice as I was reinstalling key applications—including Office 2000.

Because Windows Me is a home-oriented product, I configured Windows 98 to run both my Motorola cable modem and Network ICE's BlackIce Defender before beginning the upgrade. That didn't agree with Windows Me, and caused the PC to balk at Web access until I removed BlackIce entirely and reinstalled the cable modem-attached NIC's network settings.

Overall, Windows Me has some cool tools that Windows 98 lacks, but until we see the ubiquitous SP1 for Windows Me, I'll vote for Windows 98 as still the best choice in terms of stability. But if you're developing applications for consumer deployment, you won't get to make that choice. So, you'll need to learn, and support, both operating systems for the foreseeable future. ■

*Oliver Rist is technical director of Grand Central Network, an Internet consulting company. He can be reached at [orist@grand-central.net](mailto:orist@grand-central.net).*

### WINDOWS WATCH



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## BREAKING THE LAW

It was Benjamin Franklin who famously wrote in a 1789 letter that "in this world, nothing can be said to be certain except death and taxes."

Well, maybe. In modern life, additional certainties have emerged. Light has been held to a safe, albeit lightning-fast, maximum speed. The Law of Gravity reliably dictates that what goes up must come down. (I believe this is also known as the Law of Web Servers.) Murphy's Law assures us that "anything that can go wrong, will go wrong."

### LAWS OF COMPUTING

The computer industry charts its progress across a field whose boundaries are set by two similarly immutable laws. The first is Moore's Law.

Gordon Moore, future co-founder of Intel, was a researcher at Fairchild Semiconductor in 1965. The editors at Electronics magazine asked during an interview what the future would bring to the microchip industry. The resulting guess—Moore said he expected the number of transistors per processor would double every 12 to 18 months—proved to be remarkably accurate. It has come to be known as Moore's Law. Once or twice a year, researchers at electronics companies announce a breakthrough that will guarantee the continued verity of Moore's conjecture for another year or two.

Moore's optimistic rule of thumb is

complemented by a law of despair. In his classic "The Mythical Man-Month," IBM project manager Frederick P. Brooks stated that adding programmers to a late project could only make the project later. He formalized this observation in a formula that we now know as Brooks's Law: The complexity and communication costs of a project rise with the square of the number of developers, while the work done rises only linearly. At best.

For decades, Moore's law has saved our bacon every time Brooks's Law has thrown it on the fire.

### ENTER LINUS

The success of Linux and other open-source projects suggests that Brooks's Law may have a loophole.

The Linux project involves the contributions of thousands of programmers from all over the world. Brooks's Law dictates that such a group should find itself paralyzed. The alteration of a single function by a single programmer should result in a hailstorm of e-mail to developers whose work is related to the changed function, thousands of requests for documentation, and dozens of action plans for the regression-testing team. Upon completion of their work, each of the recipients of those messages would send reports to

the original coder and to each other, and receipt of those messages would lead to another round...and on and on for a billion years until the sun goes supernova and brings an end to the still-in-beta project.

But that's not what has happened. Somehow, the Linux team isn't paralyzed. It continues to make rapid progress, releasing updates, patches and new versions on a regular basis. The project's head honcho, Linus Torvalds, offers a pithy statement by way of explanation: "Given enough eyeballs, all bugs are shallow."

The statement—it has come, inevitably, to be known as Linus's Law—relies upon a different sort of arithmetic. Linus sees it this way: The sheer size of Linux's distributed development team means that somewhere, there is someone who can glance at a module and detect an error that other programmers find elusive. Somewhere, there is a programmer for whom fixing such a bug is a simple matter. The more developers there are on the project, the more likely it is that the team will include these programmers. Somewhere in the huge Linux community, there is a developer with the skill, the willingness and the time to do whatever job needs doing.

This argument runs parallel to the numbers Carl Sagan asked us to contemplate as we made guesses about how many planets in the universe were likely to hold intelligent life. Given enough

planets, the existence of intelligent life somewhere out there approaches certainty. That's what Linus says: Given enough developers, the existence of one who is exactly the right fellow for the job also approaches certainty.

### THE CANON ACCORDING TO ESR

The open-source movement's philosopher-in-residence, Eric S. Raymond, documented Linus's Law in his manifesto, "The Cathedral and the Bazaar." Raymond says the Internet is an essential element of the dynamic behind Linus's Law, and he says that the Web is turning programming into a social activity. I'll give him the last word:

"While coding remains an essentially solitary activity, the really great hacks come from harnessing the attention and brainpower of entire communities. The developer who uses only his or her own brain in a closed project is going to fall behind the developer who knows how to create an open, evolutionary context in which feedback exploring the design space, code contributions, bug-spotting and other improvements come back from hundreds (perhaps thousands) of people...Provided the development coordinator has a medium at least as good as the Internet, and knows how to lead without coercion, many heads are inevitably better than one." ■

*J.D. Hildebrand is the former editor of such publications as Computer Language, Unix Review and Windows Tech Journal. Reach him at [jd@sdtimes.com](mailto:jd@sdtimes.com).*

### OPEN SOURCE



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## News Briefs

### MORE PRODUCTS

◀ continued from page 10

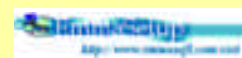
**Universal Database.** TurboLinux claims that this is the first commercial offering that combines Linux and an enterprise-class database. It includes a five-user license of the DB2 Workgroup edition, while the operating system has been optimized with features such as 4GB RAM addressable space, support for raw I/O devices and an integrated Java run-time environment. It sells for \$2,500 . . . Alias/Wavefront has enhanced reverse modeling capabilities of its product line. Advanced scan data processing capabilities in an upgraded release of **EvalViewer** for Unix, and in a new product, **Spider**, for the Windows 2000/NT platforms, are expected to ship in the fall. Scanned data, in a wide variety of file formats, can be processed with advanced tools for hole filling, meshing and section cutting in EvalViewer or Spider. When the products are combined with **Studio**, **AutoStudio** or **SurfaceStudio** from Alias/Wavefront, it provides a way to incorporate physical models into a digital design workflow . . . SteelEye Technology Inc. has released its **High Availability Web Server solution for Apache**. The HA Web



Server includes SteelEye's **LifeKeeper** clustering software for Linux 3.0, Apache Web Server application recovery kit, data replication and support for one year, and sells for \$1,500 per node

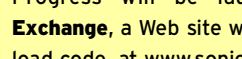
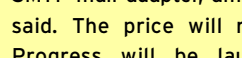
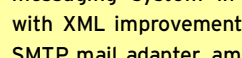
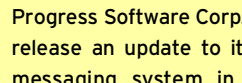
. . . Stormix Technologies Inc. has released **Storm Linux 2000 Deluxe Edition**, which includes the Debian

GNU/Linux 2.2 kernel and Sun's StarOffice 5.2 along with more than 4,400 additional applications on five CDs for \$69.95 . . . EmmaSoft Software Inc.'s new **EmmaSetup v.3**, a Windows 9x/NT/2000 tool for creating application



installers, has been extended to allow developers to write their own plug-ins, the company said. The \$159.95 product also offers users the choice of running the application being installed, viewing the readme.txt file, accessing the Internet, placing icons or rebooting after installation . . . Jn-Software GmbH has released **VbcodePrint v.6.13**, a Visual Basic add-in for setting options, previewing source code and viewing help files, among other features. VbcodePrint requires Visual Basic 6 and costs \$25 . . . Progress Software Corp. expects to

release an update to its **SonicMQ** messaging system in December, with XML improvements, a JMS-to-JMS adapter and an SMTP mail adapter, among other changes, the company said. The price will remain \$3,000 per CPU. Also, Progress will be launching **SonicMQ Developers Exchange**, a Web site where users can upload and download code, at [www.sonicmq.com](http://www.sonicmq.com) . . . eXcelon Corp. plans to release new versions of its **B2B Integration Server** and **B2B Portal Server** in October or November, the company said . . . InterSystems Corp. plans a release of **Cache 4**, its so-called post-relational database, later this year. The key new feature will be Cache Server Pages, which will allow for seamless integration into Web applications.



### PEOPLE

ILog Inc. has announced the appointment of **Jean-Francois Abramatic**, the chairman of the World Wide Web Consortium, to the position of senior vice president for research and development. Abramatic has been a member of the ILog board of directors since 1984 and will resign his seat to take the vice presidential post. **Christian Deutsch** has been named to the newly created position of vice president of operations. COO **Stuart Bagshaw** and vice president **Manuel Montalban** are leaving the company . . . **Ben C. Barnes** has been named president and CEO of real-time software developer Sagent Technology Inc., and will join the company's board of directors. Previously, Barnes was general manager of the Global Business Intelligence Solutions unit at IBM Corp. and was a member of its senior management group. **Ken**



BARNES

**Gardner**, co-founder of Sagent, will become chairman of the board, a newly created position . . . eMation Inc., a software integration company, has named **James R. Hansen** chief technology officer . . . **Jacob 'Koby' Avital** has been appointed senior vice president of engineering for Callidus Software Inc. He had been CTO at ClickNet Software Corp. . . . OpenPages Inc., a content management software provider, has named **Ron Locklin** vice president of business development . . . Zucotto Systems Inc., a maker of semiconductors for wireless Java devices, has appointed **Tim Peachey** as vice president and general manager of its San Diego global business center. ■

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## RPC R.I.P.

Today's distributed computing environments can no longer be discussed intelligently if the term middleware is indiscriminately applied to any software that goes between two thingamajigs for the purpose of passing data between them. Just about everything would be software under this old, fuzzy definition. In "The Middleware Layer Model" (Aug. 15, page 35), I argued that interapplication communication (and even intra-application) is a many-layered proposition, and that middleware in the strict sense of the term applies to packages that perform a specific type of communication at specific layers.

This is not the argument of a semanticist whose forebears were in the same line as the medieval theologians who debated the number of angels that could dance on the head of a pin. Lack of precision in language tends to lead to cloudy views of technology. (Consider, for example, the word "system," which can apply equally to hardware or software, the latter at the application layer, the interapplication layer or even—dare I say it?—at the operating-system layer.) Because of this wobbly terminology, ODBC is still viewed by many peo-

ple as middleware. Consider what ODBC actually does: It allows programmers to embed SQL statements into programs written (primarily) in C and C++, and it passes them along to the database engine for processing. This is not exactly middleware.

However, one technology that has unarguably been a part of middleware from the get-go is remote procedure calls (RPCs). These little monsters allowed one machine to invoke (activate) a function or process on another machine. They made their first appearance in the Unix operating system and are found extensively today in Unix and Windows NT. RPCs allow programmers to do some of the lowest-level communication imaginable between two machines. In fact, setting up the connection and performing rudimentary data translation is about all the RPC mechanism will do. Thereafter, it's up to the programmer to write everything that will happen, including the code to monitor the RPC's activity. To ease some of the programming tedium, a separate compiler is needed to generate program stubs for the client and

server ends of RPC (rather akin to the interface definition language (IDL) required for CORBA programming). But even this step does little to help fight off the sheer bulk of coding necessary to get RPC-based programs up and running. As a result, whenever RPCs appeared, they were generally the underpinning of a higher-level communication that would abstract them.

Because of their complexity and the fine level of granularity at which they work, RPCs have been slowly falling into disfavor. In addition, other technologies have arisen during the past few years that do a better job of calling procedures on remote machines.

As a result, the use of RPCs is likely to decline quickly. By and large, RPCs will be relegated to operating-system-level communications where low-level access to other machines is desirable. Everyone working at a level higher than the operating-system kernel is likely to use other mechanisms, such as object request brokers (ORBs), to have services and functions execute on other machines. ORBs are particularly good at this sort of thing as are other distributed computing models I will touch on in a moment.

Other than the vendors of operating

systems, not many companies sold products to help RPC coders do their thing. The notable exception was NobleNet based in Southboro, Mass., whose EZ-RPC masked many of the grisly details. However, NobleNet has gone the way of the buggy whip. It was bought by Rogue Wave last year. It is clear from the press release the acquisition was fueled by NobleNet's other products and, in fact, while the EZ-RPC product is mentioned on the Rogue Wave Web site, it is absent from the price list and the large list of online documentation.

What will take the place of RPCs? PricewaterhouseCooper's "Technology Forecast:2000" predicts that XML running over Microsoft's Simple Object Access Protocol (SOAP) will do the trick. I think this prediction is accurate as to application-level interprogram communication. Applications will use CORBA, XML and SOAP, or Java's remote invocation to handle remote procedures at a higher level of abstraction. And for programmers using these technologies, RPC programming will be a skill remembered—and not with fondness. ■

*Andrew Binstock is the principal analyst at Pacific Data Works LLC. Reach him at [abinstock@pacificdataworks.com](mailto:abinstock@pacificdataworks.com).*

## WORRYING ABOUT APPLICATIONS SECURITY

Have you noticed that although there are many books, articles and even conferences on how to create secure networks and secure operating systems, very little has been written about writing more secure Web applications? Why is that? Probably because securing applications is a lot harder and will require a lot more work. But maybe the real reason is that making your applications more secure isn't as sexy as securing a LAN or a dial-up access server. Indeed, it's downright boring and filled with drudgery.

Anyone who has a publicly available Web site needs to pay attention, even if the site contains static pages that are more brochures than active content. Having a continuous Internet connection to your corporation is an invitation for people to check the locks on your corporate computing doorstep. And everyone is vulnerable—even my minuscule office network has been scanned by bad guys looking to break in.

I am not talking about installing firewalls, although that is something every company needs to do anyway. Firewalls are fine for protecting your overall network resources and from keeping unauthorized users from gaining access to your servers and files. However, even with the best-maintained firewall, applications can be vulnerable to less esoteric means of being compromised.

Sometimes, these entry points can come about because you have written sloppy code that can be taken over by a smart programmer. Sometimes, it can be caused by forgetful administrators who don't change the root or default passwords. Both of these happened to eWeek's OpenHack experiment, where the magazine assembled a Web site and then dared people to break in (which they did, although it wasn't easy or obvious).

And sometimes, the entry points happen in surprising places. Earlier this summer, Dan Brumleve, a computer consultant, put together a program that can turn any Netscape browser into a Web server, just by clicking on a button on his Web page. The hack, called Brown Orifice, is a very scary situation, even though Dan very clearly labels the security issues that anyone opens themselves up to by running his code. The object lesson here is that any application can leave you at risk, even those from established vendors and those that we run on a daily basis.

First off, you need to assess which applications are actually running on your Internet servers. There have been problems with break-ins to ordinary Internet Information Server (IIS) running on Windows. (Microsoft has information on this, along with a fix to sev-

eral DLLs that make up IIS, at [www.microsoft.com/technet/security/bulletin/ms99-019.asp](http://www.microsoft.com/technet/security/bulletin/ms99-019.asp)). But any Web server that allows for some kind of server-side script processing or applications can be an open door for someone to insert and run their own code. Since nearly every Web server manipulates Common Gateway Interface scripts, this is a very big applications security loophole. Lots more information can be found at [www.w3.org/Security/Faq](http://www.w3.org/Security/Faq).

Sometimes, just appending two dots to the end of a URL can open up access to files that you thought were off-limits. That is why it is always a good idea to turn off directory browsing on any production Web server. And all of these concerns deal with just the Web server—once you add database servers to the mix, you open yourself up to all sorts of other application-hacking issues, including ways to compromise how the various servers communicate with each other.

What should programmers do? To start with, avoid those certain statements in any programming language that can open up your programs to outside manipulation. Add bounds checking and range definitions into your input variables to prevent outsiders from causing buffer overflows that can corrupt other parts of your programs. All it takes is very careful review of your code, from top to bottom, line by line. I know—all

it takes is time. But as I said earlier, this isn't sexy stuff.

If you must buy something, whether to stimulate your programming staff or just because that is the type of bunch you manage, one product that looks like it would help is Stackguard from Immunix.org. It claims to produce "hardened" code and perform integrity checking as part of its compiler and debugging tools.

If you are a bit rusty in this area, you might want to check out the Computer Security Applications conference in December in New Orleans. More information can be found at [www.acsac.org](http://www.acsac.org). They appear to have the right mix of technical focus and practitioners who can really educate you about the risks and ways to correct insecure application behaviors.

Pardon me if I have given you one more thing to worry about when you are lying awake late at night, wondering if your newly deployed corporate accounting system is being hacked. But this is one area in which you can protect yourself without having to buy expensive tools. And you can look like a hero to your boss when it comes time to explain why your competitors' systems have been broken into while yours remain intact—rather than the other way around. ■

*David Strom is president of David Strom Inc. and editor of the Web Informatant newsletter. Reach him at [david@strom.com](mailto:david@strom.com).*

### MIDDLEWARE WATCH



ANDREW BINSTOCK

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DAVID STROM

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## TECHNICAL CHAIRS

Alexander Nakhimovsky, Ph.D., has been teaching computer science at Colgate University since 1985. He is the coauthor of *JavaScript Objects*, *Professional Java XML Programming* and *Professional Java Programming for the Wireless Web*.

Tom Myers, Ph.D., is a software developer and consultant, working most recently on a Java/XML infrastructure for Web and wireless applications. He is coauthor of *JavaScript Objects*, *Professional Java XML Programming*, and *Professional Java Programming for the Wireless Web*.

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## BEGGING TO DIFFER

As the business world quickly moves to embrace new technology, differentiation becomes especially critical. The poor folks who hold MBAs and not Ph.Ds in computer science are having a dickens of a time getting their arms around the very concepts they're being instructed by their bosses to adopt. Are servers hardware or software programs? (Stop arguing...they're both!) And just when business managers got that down, a new category of server software, called the application server, emerged along with a new development architecture. Then, to muddy waters more, those application-server vendors started adding in all kinds of goodies to augment their platforms as they moved to create integrated development, deployment and management environments.

For ease of discussion, but certainly not for the sake of clarity, phrases such as "e-business platform" and "end-to-end solution" have come into being, particularly in vendor marketing material. Most people generally wink and nod at the terms without actually having a complete understanding of what the vendor is trying to say. There's no definition because just about everything is being called an e-business platform. It's like a shopping list. Everybody knows what one is, but it's what you put in the cart as you traverse the aisles that sets your list apart from the one held by the person at the next checkout counter.

So with many companies vying in the "e-business platform" space, how is a potential customer to know if SilverStream's Application Server, for example, is a better choice for his enterprise than, say, Blue-

stone's Total-e-Server? Or if they even do the same things?

As they say in the car business, it's all in the options.

"All the standards will become moot," said Peter E. Brumme, SilverStream's vice president of market and business development, referring to the fact that most application servers already support Sun's Java 2 Enterprise Edition specification. "It's the layers of value that sit atop the application server that will become what's important."

By year's end, SilverStream expects to have its application server J2EE-compliant, and also comes at the "e-business platform" from the direction of customer relationship management and B-to-B integration. "The development paradigm is changing," Brumme said. "At first it was tools. Then proprietary technologies to take you further. J2EE helps shift the focus to components and frameworks."

Many companies, such as BEA Systems and its "Mini-Me," WebGain, have used acquisitions to add value to their product lines. Another significant partnership, announced two weeks ago, involves IBM and Rational. Under terms of the agreement, the Rational Unified Process will be extended and customized for the development of applications for IBM's WebSphere application server.

"The Unified Process embodies best practices in six major areas," said Glenn C. Hughes II, director of strategic alliances at Rational. "Two that are important here are visual modeling using object-oriented analysis and design techniques using UML, and the use of component architectures, in this case J2EE, which is the best

example of Web-based component architecture."

"It makes things more convenient for customers but gives [IBM] a competitive advantage," he added. "It's not just guidance but the whole array of Rational tools."

Iona Technology has spawned an "e-portal" from its middle(ware), which provides not only support for a new industry buzzword, but also a development toolkit and application integration centered on its Orbix product family. Allaire is targeting the ISV-OEM market with a small-footprint server. Sybase has seemingly pushed its database to the back burner as it emphasizes its Enterprise Portal, and especially the iAnywhere Wireless Server, designed to offer cell phones and other PDAs uninterrupted access to data. GemStone, newly acquired by Brokat, believes that its point of differentiation is its emphasis on running multiple JVMs within a single application server.

Already, there are clear winners. The companies that perform benchmark testing and the analysts who provide papers on these new application integrations are delighted by all this—as is Sun, which can pass go and collect its licensing fee every time another app server vendor comes around the board looking for the "J2EE Compatible" label for its packaging.

More partnerships and acquisitions are inevitable as companies race to establish a foothold in the "e-business platform" space, or to maintain what they perceive to be an inside position. Companies that do messaging, or utilize SOAP, XML and wireless standards, will be prime targets to be rolled into a complete "end-to-end solution." Unless they differentiate. ■

*David Rubinstein is executive editor of SD Times.*



**MONEY WATCH**

**DAVID RUBINSTEIN**

## ON THE INSIDE

**RSA Security Inc.** saw the heaviest insider action for the period ending June 30, as option-related buys turned into open-market sales and resulted in a little more financial security for those involved. President Arthur Coviello Jr. optioned 45,000 shares at \$9.97 per share and sold them at \$61.56 per share on June 1, while vice president Scott T. Schnell bought 10,000 options at between \$12.06 and \$16 per share and sold them for \$64.06 per share on June 2, and senior vice

president Joseph Uniejewski optioned 4,613 shares at \$11.56 per share and sold them at an average price of \$63.75 per share between June 7 and June 12.

At **Citrix Systems Inc.**, senior vice president Bruce Chittenden made an option-related buy of 11,990 shares at \$5.96 per share between June 13 and June 26.

Marc Ewing, a co-founder at **Red Hat Inc.**, sold 2 million shares from June 20 to June 27 at between \$28.04 and \$35.08 per share.

## STOCK WATCH

### \$2 BILLION-PLUS

Company	Symbol	Close 8/11	Market Cap. (billions)	Shares Out (millions)
Microsoft	MSFT	72 7/16	381.20	5,262
Oracle	ORCL	81 1/8	230.30	2,838
Sun Microsystems	SUNW	112 3/16	178.40	1,586
SAP	SAP	62	77.94	732
BEA Systems	BEAS	50 3/4	19.02	375
Computer Associates	CA	24 7/8	14.70	591
Rational Software	RATL	98 7/8	9.23	93
Broadvision	BVSN	31 1/4	7.81	250
PeopleSoft	PSFT	24 13/16	7.24	292
BMC Software	BMCS	18 1/2	4.56	247
Citrix Systems	CTXS	19 7/8	3.68	185
Cognos	COGN	39 5/8	3.46	87
Red Hat	RHAT	20 1/16	3.15	157
Symantec	SYMC	48 3/8	2.93	61
Compuware	CPWR	8	2.90	363
Network Associates	NETA	20 1/16	2.78	139
RSA Security	RSAS	60 1/2	2.38	39

### \$2 BILLION - \$500 MILLION

Company	Symbol	Close 8/11	Market Cap. (millions)	Shares Out (millions)
Iona Technologies	IONA	70 5/8	1,444	20.45
Entrust	ENTU	24 7/8	1,333	53.58
Informix	IFMX	4 9/16	1,279	280.4
Serena Software	SRNA	29 3/8	1,154	39.28
Legato Systems	LGTO	8 7/8	770	86.78
Allaire	ALLR	28 1/8	760	27.04
Axent Technologies	AXNT	23 13/16	685	28.81
ILOG	ILOG	45	684	15.20
Rainbow Technologies	RNBO	46 15/16	582	12.4
SilverStream Software	SSSW	27	546	20.25
Baan	BAANF	2 9/16	539	242.4

### UNDER \$500 MILLION

Company	Symbol	Close 8/11	Market Cap. (millions)	Shares Out (millions)
Cysive	CYSV	15 1/16	417	27.72
Marimba	MRBA	17 1/2	407	23.31
Inprise	INPR	5 1/4	322	61.20
MapInfo	MAPS	34 1/2	320	9.30
Starbase	SBAS	6 11/16	311	46.55
Persistence Software	PRSW	15 3/4	307	19.51
Saga Systems	AGS	10 3/8	301	29.07
Merant	MRNT	7 1/16	210	29.86
Excelon	EXLN	7 1/8	208	29.32
Brio Technology	BRIO	6 15/32	182	28.15
EarthWeb	EWBX	14 5/8	152	10.41
Viador	VIAD	8 3/4	146	17.33
Be	BEOS	4	143	35.86
Centura Software	CNTR	3 1/4	127	39.00
Santa Cruz Operation	SCOC	3 17/32	126	35.81
Attunity	SISG	12 13/16	122	8.42
Digital River	DRIV	5 9/16	121	21.84
Alladin	ALDN	10 1/8	114	11.39
Unify	UNFY	3 15/16	72	18.39
Rogue Wave Software	RWAV	6 3/8	68	10.81
Fatbrain.com	FATB	3 5/8	47	13.00
Gensym	GNSM	3 21/32	23	6.33
Programmer's Paradise	PROG	3 3/16	16	5.06

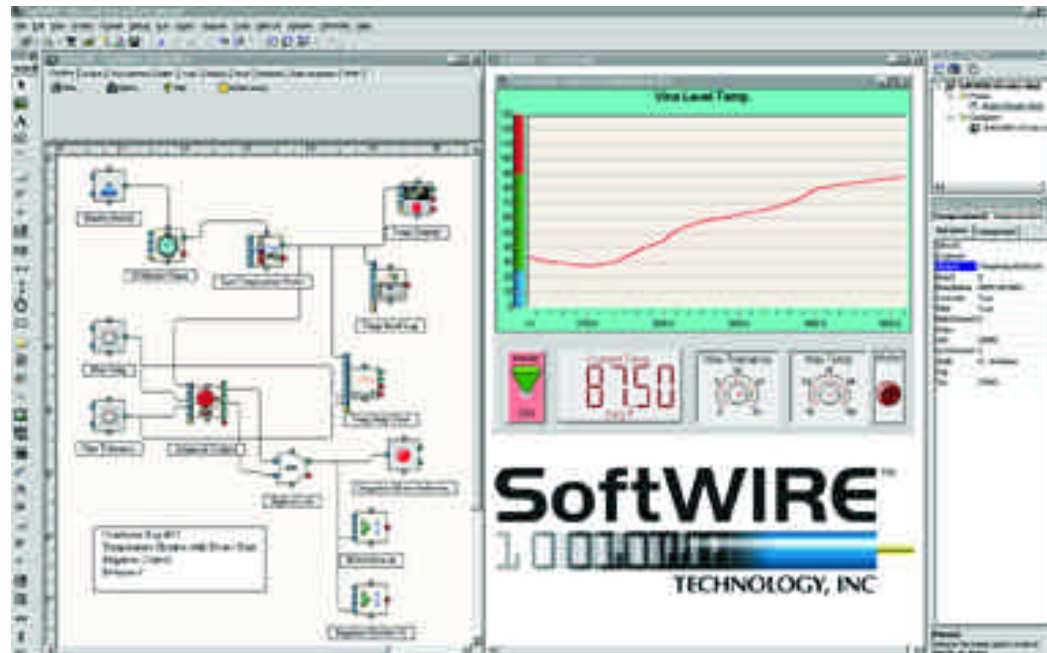
# IBM JVMs Released For J2SE

IBM Corp. has released five of nine planned Java Virtual Machines (JVMs) that support Sun Microsystems Inc.'s Java 2 Standard Edition 1.3 specification. A sixth is expected to be released this week.

The new JVMs are now available for AIX, Linux and OS/390 from [www.ibm.com/java/jdk/download/index.html](http://www.ibm.com/java/jdk/download/index.html). The new JVM for OS/400 is available in the latest release of the operating system, according to the company. A Windows version is being included in WebSphere preview technologies ([www.ibm.com/software/websphere/developer](http://www.ibm.com/software/websphere/developer)).

The sixth production release, a version for OS/2 Warp running on Intel's x86 processors, is expected this week. The other JVMs, targeted at operating systems running on Intel's forthcoming Itanium processor, are scheduled for release before the end of the year.

Also, IBM announced Community Based Services, a new offering to provide clients with tools to share knowledge within their organizations. ■



SoftWire 2.0 permits Visual Basic 6.0 users to create code automatically, as seen in the window at far right.

## SOFTWIRE

◀ continued from page 1

wasn't much of a stretch to give it the ability to create stand-alone applications. "About the time we got to releasing the product in January, we thought if we added a network interface, database and Excel interface tools, we'd have a wonderful general purpose application development tool," which he said can do most of the job. "You can use the graphical tools for the first 80 percent of the applications, and the really special-purpose things, you can do in straight Visual Basic."

According to the company, version 2.0 includes enhancements to database, TCP/IP,

arithmetic, financial and analysis functions. New database options include query and grid builders, and the ability to read from and write to Access, Oracle and SQL Server databases. The tool can also draw Excel charts and read from and write to Excel spreadsheets.

However, being true to the tool's roots, Measurement Computing also beefed up some of the program's test and measurement interface capabilities, including those for oscilloscope, strip chart and digital voltmeter, and has added new X10 controls—including a periodic light/appliance timer control—for helping to automate consumer home and office systems.

SoftWire 2.0 is available now

for \$495 per seat; commercial applications may be distributed royalty-free. The cost also includes unlimited phone and e-mail support, which Judd said may not always be the policy, but for now, the company has not been overwhelmed with support calls. "The whole idea of the package has been to make it easy to use," he said. "So if we were facing a large telephone support chore, I would say we missed the boat." Measurement Computing ([www.measurementcomputing.com](http://www.measurementcomputing.com)), which recently changed its name from ComputerBoards Inc., is in the process of forming SoftWire Technology Inc., a new business that will focus specifically on selling the software. ■

## BEA

◀ continued from page 1

By supporting such J2EE specifications as Enterprise JavaBeans, Java Server Pages and Servlets, Java Messaging Service and Java Transaction API, Kiger said, BEA offers through its WebLogic servers an e-commerce platform that is portable and scalable and allows for component development, application integration and personalization.

The next release of BEA's WebLogic application servers is due to go into beta in the next few months, Kiger said, and will bear the stamp of certification.

## PROCESS INTEGRATOR HITS MARKET

BEA ([www.bea.com](http://www.bea.com)) also announced the release of WebLogic Process Integrator, a process integration and workflow engine that the company claims will allow for integration of business partners, front- and back-end systems, and workflow management.

"Integration with existing systems is a critical part of e-commerce," said Kiger. "We're expanding our Java-based platform extensively."

Other features of the Process Integrator include the ability to separate business processes from run-time components to expedite process enhancement, and to allow developers to create applications using proven workflow concepts. ■

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